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REMEDIAL CASES IN READING:  
THEIR DIAGNOSIS AND  
TREATMENT



# REMEDIAL CASES IN READING: THEIR DIAGNOSIS AND TREATMENT

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## CHAPTER I

### INTRODUCTION

#### A SIGNIFICANT ILLUSTRATION

Two years ago it was found necessary for a fourth-grade boy to discontinue regular school work because of inability to read. His deficiency was so marked that his father feared for a time he would have to give up school work altogether. In the study which was made of his case it was found that he had never learned to move his eyes with speed and accuracy from the end of one line to the beginning of the next. Furthermore, he did not move his eyes regularly from left to right along the printed lines. At times the first fixation was near the end of the line; frequently it was near the middle; and sometimes it was near the beginning. The remaining fixations were irregular and followed no definite order.

Drill exercises which differed from ordinary printed material in two respects were prepared for use in establishing effective eye-movements. The lines were typewritten an inch apart to aid in developing accurate return sweeps from the end of one line to the beginning of the next. In order to develop regular movements of the eyes from left to right along the lines, three sets of exercises were prepared in which the spacings between words were wider than in ordinary print. In the first exercises, unrelated words were typewritten five letter-spaces apart. The boy was required to read these words in regular order for five minutes each day. After considerable progress had been made in the fluent recognition of unrelated words, a simple story was typewritten with five letter-spaces between words. After completing ten exercises of this type the words were grouped in thought units which were separated by five letter-spaces. Finally stories were read from books during the drill periods. The fluency and accuracy with which he soon read indicated that the graded exercises and the constructive suggestions which accompanied them had eliminated at least two of his major difficulties. Other problems, such as increasing the span of recognition and the development of independence in the recognition of words, were then undertaken. At the end of four months the boy was permitted to resume regular work with his class. One year later he was carrying fifth-grade work very successfully.

## TO YOUNG ALBION, A. REMEDIAL CASES IN READING

This case has been described at length because it is an excellent illustration of the fact that regular classroom instruction frequently fails to provide adequately for pupils who encounter unusual difficulties in reading. There are thousands of boys and girls in school each year who make little or no progress because of inaccuracies and personal handicaps which could be eliminated. These disabilities result in discouragement, retardation, and elimination in far too many cases. Society recognizes clearly that children differ widely in native endowment and learning capacity; it insists, however, that schools utilize every means possible to provide the most effective instruction for each child. If teachers meet this obligation successfully, they must make systematic detailed studies of the reading difficulties of children and they must provide appropriate remedial instruction. The importance of such a program is emphasized by a second illustration.

### NEED OF CLASSROOM STUDIES OF READING DIFFICULTIES

Two fourth-grade pupils who were failing in their school work recently made equally low scores in a comprehension test. The same remedial exercises were given to them on the assumption that they encountered similar difficulties. At the end of four weeks they were tested again with little or no evidence of improvement. The suggestion was offered that a careful study be made of the errors which they made in reading in order to determine more accurately the nature of their specific difficulties. Accordingly, oral- and silent-reading tests were given and detailed records were kept of the errors made in class exercises.

A study of the information which was secured showed clearly that their difficulties were very different in character. Pupil A read fluently, but did not direct his attention to the content of what he read and consequently failed notably in interpretation. Pupil B, on the other hand, encountered numerous word difficulties and read very slowly. Because the problem of recognition required so much attention, he was unable to make a creditable record in comprehension. For a period of four weeks these pupils were given special remedial exercises. Pupil A was required to find the answers to specific questions, to select the important points of paragraphs, to reproduce what he read, and to follow directions. Pupil B, on the other hand, was given exercises in word analysis, in rapid recognition, and in grouping words in thought units. When the pupils were tested again each scored relatively high in comprehension.

This illustration is significant because it shows clearly that a teacher must know more than the fact that a pupil ranks low in a reading test or fails in the preparation of an assignment in history. She will be able to improve the quality of his reading only when she knows the specific nature of his difficulty and provides appropriate remedial instruction. This implies that teachers should scrutinize the work of their pupils with great care, should give tests frequently, should record facts daily, and should provide instruction to meet the needs of pupils who encounter difficulties. The importance of these steps has been so widely recognized during recent years that they have been adopted as a part of the routine of instruction in many classrooms.

#### RECENT PROGRESS IN REMEDIAL INSTRUCTION

During the last year more than thirty cities have made detailed reports of diagnostic and remedial studies. Progressive teachers and supervisors of many other cities have reported that they have given a considerable amount of time to remedial instruction. The significant results secured in such cities as Stoughton, Wisconsin, Rochester, New York, and Seattle, Washington, furnish convincing evidence of the value of such work. In order to provide classroom teachers with expert help, several cities have established educational clinics where detailed diagnostic studies are made and have also provided special rooms where remedial instruction is given. Other cities, of which Los Angeles, California, is an excellent illustration, have given considerable attention to the development of materials of instruction appropriate for different types of cases. These constructive steps are very important inasmuch as the problems of group instruction are so numerous that classroom teachers find it impossible, without expert assistance, to give adequate attention to pupils who are seriously retarded in reading.

#### PROBLEMS FOR SOLUTION

Wherever diagnostic and remedial studies have been undertaken, four problems have been encountered which are in urgent need of solution. In the first place, there is need of specific information concerning important types of remedial cases. Detailed descriptions of the characteristics of the various types will help teachers to recognize more quickly and to classify more accurately the pupils under their instruction who encounter difficulties in reading. In the second place, there is need of detailed information concerning appropriate instruction for remedial cases. In this connection methods of teaching and drill

devices are needed which will enable teachers to give remedial instruction economically and effectively. In the third place, the technique of diagnosis should be developed in greater detail; it should be refined to the point of accuracy and precision; and it should be simplified sufficiently to enable teachers to make frequent studies of individual cases. Finally, there is urgent need for teachers who are thoroughly trained to engage in diagnostic and remedial work effectively. A clear realization of the significance of these problems has recently stimulated investigators to make detailed studies of difficulties encountered by pupils in reading.

#### PURPOSE OF THIS INVESTIGATION

The series of experiments which are reported in this monograph were undertaken with three major purposes in mind: (a) to discover as many types of remedial cases in reading as time and resources would permit; (b) to determine the causes and distinguishing characteristics of each type; and (c) to develop appropriate methods of remedial instruction in each case. Although considerable attention was given to the technique of diagnosis, the causes of unusual difficulties in reading and appropriate remedial measures received most consideration. Use was made in many cases of methods of diagnosis which have been reported in previous investigations. These methods were supplemented by others which were planned specifically for use in this investigation.

#### MAJOR STEPS IN THE INVESTIGATION

The pursuit of this investigation has involved four distinct steps. (1) A summary was prepared of the remedial cases which have been published and which were submitted by superintendents, supervisors, and teachers. (2) Plans were organized for diagnosing individual cases and for carrying on remedial instruction. (3) Twenty-seven pupils who encountered unusual difficulties in reading were studied at or near the University of Chicago for the purpose of securing detailed information concerning remedial cases. In this connection the writer was assisted in the diagnoses by Miss Laura Lucas and Miss Delia Kibbe, members of the Faculty of the Elementary School of the University of Chicago, and by Mr. L. W. Miller, a graduate student. The remedial instruction was given entirely by these co-operators with the aid of such advice as the writer was able to give them as he observed their teaching. (4) Studies were made of twenty-six retarded pupils in Toledo, Ohio, for the purpose of determining effective methods of organizing and directing diagnostic and remedial work in cities. Permission to undertake this

work in Toledo was secured through the courtesy of Superintendent Charles S. Meek. The diagnoses were made with the co-operation of Miss Estaline Wilson, Assistant Superintendent of Schools, Miss Florence E. Hawkins, Primary Supervisor, and Miss Flora Nettleman, Intermediate Grade Supervisor. The remedial work was carried on by ten special teachers under the direction of Miss Wilson.

The four major steps of the investigation will be discussed in detail in subsequent chapters in the order in which they have been outlined.

## CHAPTER II

### SIGNIFICANT TYPES OF REMEDIAL CASES AND CAUSES OF FAILURE IN READING

The purpose of this chapter is to describe briefly five significant types of remedial cases in reading and fourteen causes of failure which have been reported in previous investigations. Such descriptions were of great value in recognizing and classifying many of the remedial cases which are reported in later chapters.

#### SOURCES OF INFORMATION

The sources of information for this summary were (a) published reports of diagnostic and remedial cases and (b) descriptions which were received from more than thirty school systems. The studies which have been published were made in university laboratories, educational clinics, and elementary-school classrooms. The following illustrations describe typical conditions under which the investigations were carried on. (1) Miss Katherine McLaughlin, while working in the laboratories of the School of Education, the University of Chicago, studied individual cases through the use of tests and an elaborate apparatus for photographing eye-movements. As soon as specific difficulties were discovered, remedial instruction was given, and the results were determined through careful, scientific measurements. (2) Dr. Clara Schmitt, of the Department of Child Welfare of the Chicago public schools, made clinical studies of individual cases, referred them to special teachers for remedial instruction, and determined the progress which had been made at various times during the training period. (3) Superintendent C. J. Anderson and Miss Elda Merton made at Stoughton, Wisconsin, several very interesting diagnostic studies through the use of standardized tests. After specific difficulties had been determined, remedial instruction was given by classroom teachers. These studies are of very great value because they show clearly that diagnostic and remedial work can be carried on effectively in city systems.

The second source of information included reports of cases which were received from school officers. In the spring of 1921 a reprint of an article<sup>1</sup> entitled, "The Diagnostic Study of an Individual Case in

<sup>1</sup> William S. Gray, "The Diagnostic Study of an Individual Case in Reading," *Elementary School Journal*, XXI (April, 1921), 577-94.

Reading" was sent to eight hundred superintendents, principals, and supervisors in various sections of the country, with a request for descriptions of remedial cases under their supervision. Fifty descriptive reports were received from thirty school systems. These reports included a wide variety of interesting types, many of which will be reported in later sections of this chapter.

#### NATURE OF REPORTS AND DESCRIPTIONS

The descriptions of remedial cases which are available can be classified into two distinctly different groups. In some descriptions the phase or phases of reading in which difficulty occurred was emphasized. The following titles are significant in this connection: "A Sixth-Grade Boy Who Cannot Read Primer Material Fluently"; "A Fluent Oral Reader in the Fourth Grade Who Comprehends Very Little Read Silently"; "The Rapid Reader Who Neglects Details." In other descriptions the specific cause of failure was emphasized, as indicated by the following titles: "A Third-Grade Boy Who Was Unable to Read Orally Because of Defective Vision"; "The Foreign Child Who Is Handicapped in Third-Grade Reading Because of a Meager Vocabulary"; "An Analytical Study of a Case of Alexia." In the summary which follows general types of remedial cases are presented first. These are followed by descriptions of specific causes of failure in reading. Each case is described briefly with emphasis on its most significant characteristics. No attempt was made to include descriptions of all cases which have been reported. A very careful selection was made, however, in order to present a wide variety of different types.

#### GENERAL TYPES OF REMEDIAL CASES

There are striking differences in the accomplishments of children who encounter difficulties in reading. Some read intelligently but very slowly; others read rapidly but fail to give adequate attention to the content of what is read; still others can understand anything they are able to read, but encounter serious difficulty in recognizing words. A complete list of these cases would be of great value to a teacher in recognizing and classifying pupils who encounter serious reading difficulties. The list which follows is complete because it is based entirely on cases which have been reported. As investigation continues it will no doubt be possible to add other significant types to the list.

*Case I: A third-grade boy who was seriously retarded in all phases of reading.*—Pupils in each grade, including the high school, have been reported as notably weak in all phases of reading accomplishment.



They are discovered most frequently in the third and fourth grades because their difficulties in reading begin to interfere at that time with their progress in other subjects. In some cases the causes of their difficulties are evident, such as poor eyesight, low native intelligence, or poor instruction; in other cases, the causes of unsatisfactory progress are difficult to determine. The case which is reported in the following paragraph was submitted by J. F. Robinson, Nims School, Muskegon, Michigan, and describes weaknesses in all phases of reading.

This ten-year-old boy was so retarded in reading that he was classified as a medium first-grade reader although his assignment was for the third grade. His reading was monotonous, jerky, and colorless, lacking any evidence of fluency and intelligent interpretation. The rudimentary reading habits apparently had not been formed effectively. The remedial problem was to determine a new starting-point and to awaken keen interest in reading. Therefore, simple exercises in a first reader were assigned. The aim was to develop fluency. When the second reader was begun, blackboard work was introduced as an aid in thought getting. The sentences which were used were carefully chosen. They proved very helpful in developing confidence and in making him an intelligent fluent reader. When a third reader was introduced, blackboard work was discontinued and silent reading substituted. As soon as he was able to read to himself effectively, supplementary readers, short stories, and library books were provided. His progress was very rapid after he began to read extensively.

*Case II: A fluent oral reader in the fourth grade who comprehended nothing read silently.*<sup>1</sup>—Pupils frequently learn to recognize words fluently and accurately and to express themselves satisfactorily in oral reading without understanding the content of the passages read. This is due to various causes, such as failure to direct attention to the content, lack of interest and attention, a limited meaning vocabulary, a narrow background of experience, ineffective habits of thinking, low native intelligence, or poor instruction. Whatever the cause may be, this type of case presents a serious problem because progress in other subjects will be retarded until intelligent habits of reading have been established. The following case is a good illustration of failure to develop the habit of reading for content.

This fourth-grade girl was described by her teacher as slow and indifferent. In the Gray Oral Reading Test she made a score of 41.25 which is 5.75 below the standard for fourth-grade pupils. In the silent-reading test she read slowly and was unable to reproduce what she read or to answer questions. "To discover if mechanics of reading was causing the difficulty, she was asked

<sup>1</sup> C. J. Anderson and Elda Merton, "Remedial Work in Reading," *Elementary School Journal*, XX (May, 1920), 687-92.

to read the same material orally. She read fluently and with expression at the rate of 1.01 words per second, making only four errors. . . .” After studying the case carefully the following conclusion was reached in regard to her difficulties. “Knowledge of the rudimentary mechanics permitted her to read material far beyond her comprehension. She read words as names and not as symbols of ideas. The problem was plainly that of training her to read for content.”<sup>1</sup>

Remedial exercises included passages cut from second- and third-grade readers. The first of a series was very short; each succeeding passage was somewhat longer and made increasing demands on the reader to get the meaning. The following quotation describes the method which was employed in directing her attention to the content. “After she had given a reproduction of the ‘story’ and had answered a number of specific questions about it, she was asked to re-read the selection in search of any thoughts she had overlooked during the first reading. She then gave a second reproduction. This last reproduction was, no doubt, largely a result of the specific questions. Nevertheless, it was valuable in training the pupil to see the richness of content in the selection.” At the conclusion of the training period the tests showed that she had improved in both oral and silent reading and that her interpretations were “fairly efficient.”

*Case III: A third-grade boy who was relatively strong in ability to interpret but who was greatly retarded in the mechanics of reading.*—This case is practically the reverse of Case II. It is a very significant type because pupils who are thus handicapped will be unable to take full advantage of their powers of interpretation until they have learned to read fluently. The original report was submitted by Superintendent W. C. French and Miss Eleanor M. Johnson, Drumright, Oklahoma. The summary report which follows describes the fundamental lines along which remedial instruction was organized.

The subject in this case was nine years and nine months old. According to the Binet-Simon Intelligence Tests his I.Q. was 97. An examination of his reading accomplishments through the use of oral- and silent-reading tests showed clearly that he was very weak in the mechanics of reading but relatively strong in ability to interpret. His specific difficulties were (a) inability to recognize unfamiliar words, (b) repetitions, due to carelessness, periods of confusion, and inability to group words, (c) inaccurate return sweeps of the eyes from the end of one line to the beginning of the next, (d) a limited span of recognition, and (e) vocalization in silent reading. Remedial instruction was carried on for two thirty-minute periods each day for a month. Distinct and different types of exercises were given during each of the daily reading periods. In the morning an attempt was made (a) to increase his span of recognition, (b) to increase his ability to recognize words independently and

<sup>1</sup> A condensed summary of the original report.

accurately, and (c) to assist him in grouping words in thought units. During the afternoon period exercises were conducted (a) in oral reading to develop independence in recognizing words fluently, and (b) in silent reading to increase his rate of reading and also his ability to interpret. The tests at the end of the training period showed a notable increase in both oral and silent reading.

*Case IV: A fifth-grade boy who read very slowly.*<sup>1</sup>—Pupils who are able to recognize words accurately frequently fail to recognize them quickly or in large units and therefore read very slowly. Group silent-reading tests show that pupils who make equivalent comprehension scores differ widely in their rates of reading. This may be due to any one of a large number of causes, such as difficulties in recognition or inaccurate habits of eye-movements. In the case which follows slow rate of reading was attributed to the fact that the subject recognized a single word rather than a group of words at each fixation of the eyes.

Frequent tests and observations revealed the fact that this pupil read very slowly because he recognized words individually rather than in groups. "In order to provide training in the rapid recognition of groups of words, eight phrase books were prepared in which a phrase was pasted on each page. The first book contained ten very simple phrases cut from a primer. Each succeeding book in the series contained a similar number of longer and more difficult phrases. The eighth book contained phrases from a sixth reader. In conducting drill exercises the teacher flashed each page so quickly that the pupil had time for only one fixation. As soon as a phrase had been exposed, the pupil immediately told what he had seen. A grade of ten was given for each entirely correct response." Fourteen exercises were conducted with these drill books. A given book was not discontinued until a score of 100 had been made in two successive lessons. At the close of each lesson the boy was assigned a selection from his reader. At the end of a minute he was asked to indicate how much he had read. His scores showed that his rate of reading had increased from 60 words per minute on the first day to 105 words per minute on the fourteenth, which was clear evidence of the effectiveness of the drill exercises.<sup>2</sup>

*Case V: A rapid reader who neglected details.*<sup>3</sup>—Many pupils read very rapidly, neglecting many important details. This results in

<sup>1</sup> William S. Gray, "Individual Difficulties in Silent Reading in the Fourth, Fifth, and Sixth Grades," *Twentieth Yearbook of the National Society for the Study of Education*, Part II, pp. 48-49.

<sup>2</sup> A condensed summary of the original report.

<sup>3</sup> Charles H. Judd, *Reading: Its Nature and Development*, Supplementary Educational Monographs, II, No. 4 (July, 1918), 160-61.

inaccurate oral reading or failure to get all of the significant points in silent reading. In the case which is here described inaccurate habits of reading were due to failure to receive systematic training in reading while the subject was a youth.

The subject finds that he can read familiar matter at a rate as high as eight words per second. Difficult matter involves more effort and reduces his rate to two or three words per second. His eye-movements in silent reading are long, often covering phrases. In oral reading his eye-movements are more numerous to the line than in the case of most adults and involve many regressive movements. This person is a poor oral reader. He is conscious of inability to sound new words such as proper names. In silent reading he sees only the length of the proper name and a few conspicuous letters; he never gets the details. He learned to read as a child without being taught—picked up reading, as it is said. He is a poor speller. He is quite irregular in his mistakes in spelling; this shows that he does not have wrong associations between sounds and letters but is lacking in stable associations. In mature years this person substituted a knowledge of the derivation and structure of words for sound associations. As a result he has improved somewhat in spelling but is easily confused and is never quite sure that he is right. He finds that if he must read a passage out loud it is very desirable that he practice it.

The case is significant for this report chiefly as a warning against the picking up of the reading habit by children. The danger is that the habits of seeing words and phrases will get established firmly and will include in some cases a sufficient vocabulary to remove all disposition to learn the details of word structure through phonic or letter analysis.

Only five types of cases have been described. Others which differ only in certain details might have been included. The following titles are illustrations: "The Slow Reader Who Compensates by Hard Work"; "A Sixth-Grade Boy Who Was Unable to Understand First-Grade Material"; "A Fourth-Grade Girl Who Was Unable to Apply Phonetic Training"; and "A Sixth-Grade Boy Who Confused Many Words Which Were Similar in Form." These cases were not included in this report because it seemed advisable to emphasize at this time types of cases which are distinctly different from each other. It will prove helpful to teachers who begin diagnostic work to classify poor readers at first into groups such as the following: (a) poor in all phases of reading; (b) weak in the mechanics of oral reading; (c) poor in interpretation; (d) slow in silent reading; and (e) neglect important details. As investigation continues the number of distinct types will increase and the characteristics of each will be more fully known.

## SPECIFIC CAUSES OF FAILURE IN READING

An effective diagnosis includes more than the determination of the general type of difficulty which a pupil encounters. The most important task of anyone who makes a diagnosis is to discover specific causes of a pupil's disability. McCall<sup>1</sup> has listed the following "common fundamental breeders of ability defects"; insufficient practice; improper methods of work; deficiency in fundamental skills; absence of interest; physical defects; and subnormal intelligence. Although a knowledge of these general causes of difficulty is valuable it is necessary to carry a diagnosis far enough to locate specific causes of failure in a particular phase of reading. For illustration, investigations have determined the following causes of failure in interpretation: inadequate mastery of the mechanics of reading, a limited meaning vocabulary; a narrow range of experience; poor habits of thinking; and low native intelligence.

In the summary which follows no attempt has been made to include all the causes of failure which have been reported or to classify them either under the five general types of remedial cases, or under the "fundamental breeders of ability defects" as listed by McCall. Although the advantages of each of these classifications were fully appreciated, neither was attempted in this chapter because the data available were not sufficiently detailed or reliable to guarantee a scientific classification. The descriptions which follow are of greatest value in pointing out specific causes of failure in reading which must be considered in making diagnostic studies.

## INFERIOR LEARNING CAPACITY

The fact is commonly recognized that many mentally defective children are unable to learn to read. In a large number of schools these pupils are assigned handwork and constructive occupations of one type or another in order to train them, if possible, to earn a living. On the other hand, there are many children of low native intelligence who have sufficient capacity to learn to read effectively, but who fail because they do not receive appropriate instruction. The following report<sup>2</sup> of a second-grade boy who had been in school for several years without learning to read emphasizes the importance of appropriate classification and very simple remedial instruction.

<sup>1</sup> William A. McCall, *How to Measure in Education*, pp. 109-111. New York: Macmillan Co., 1922.

<sup>2</sup> E. E. Keener, "Use of Measurements in a Small City School System," *Journal of Educational Research*, III (March, 1921), 204.

In one second grade the intelligence tests showed that the pupils ranged from moron to very superior in ability. They were arranged into groups as homogeneous as possible, taking into account the results of the tests, the scholarship records, and the judgment of the teacher. The members of the slowest group learned much more rapidly when taken from the regular classes. One boy with an I.Q. of 52 had been in school for a number of years without being able to read at all. In a group where other children were not greatly superior to him, he learned to read easy material. Until this arrangement was made the teaching went entirely over his head. On the other hand, the brightest group did much more than the normal amount of work for the second grade. Six of the brightest pupils were put into the next higher grade, and their present success indicates that they will continue to advance at more than the normal rate.

#### CONGENITAL WORD BLINDNESS

Some children who are otherwise normally endowed experience extreme difficulty in learning to recognize printed or written language. This difficulty has been defined as congenital word blindness, or, *dyslexia*. It refers to inability to understand and interpret symbols rather than to inability to see them and is attributed to imperfections or lack of development of those areas of the brain which normally serve as centers for recording images or memories of printed or written symbols. The fact that cases of *dyslexia* have been found in several generations of the same family suggests that it is a hereditary trait. The following report<sup>1</sup> illustrates some of the important characteristics of a somewhat serious case.

L. R. at the first examination, age 9 years, graded 7.8 by the 1911 Binet, being retarded 1.2 years (I.Q. 87), and about 8 years by the Seguin form-board, according to the writer's norms (*Psycho-Motor Norms for Practical Diagnosis*, 1916, Tables XLVIII and XLIX). At the age of 11.1 he graded 9.3 by the Stanford (or 9.6 by the 1911 and 9.8 by the 1908 scale), being retarded 1.8 years (I.Q. 84), and about 11.5 by the Seguin. After six years in school (with frequent absences) he was reported as doing II-2 successfully. He was reported to be of "slow mentality," indifferent, lacking in sustained attention, and did his best work in arithmetic and poorest in reading and spelling. He required 1' 53" to read to "near" in the Stanford selection (12 words), receiving aid on six words and read "the" for "three." He was diagnosed as a case of *dyslexia*, very backward in intelligence, but not feeble-minded.

In discussing practical suggestions for the school treatment of cases of *dyslexia* Wallin says,

Word-blind children who are not feeble-minded should be assigned to special reading disability classes, where various methods and devices of teaching

<sup>1</sup> J. E. W. Wallin, "Congenital Word Blindness—Some Analyses of Cases," *The Training School Bulletin*, Vineland, New Jersey (September-October, 1920) p. 3.

reading may be tried out. We shall find that some children may be tired out. We shall find that some children can be reached by certain methods, while others can be reached by other methods. When it has been shown, however, that a child cannot be taught to read by the intensive application of various methods of teaching reading, the school branches should be presented orally. In fact, one of the advantages of assigning a word-blind child to a reading disability class is that he may secure from the teacher's lips the instruction which fits his level of intelligence and which he cannot secure through the printed page because of his inability to read.

There are wide differences in the character and severity of cases of dyslexia. For illustration, "Word blindness may affect only letters or Arabic numerals, or certain groups of letters or figures, or certain syllables, or whole words or certain groups of words, or certain languages but not others, . . . ." It has been suggested that such cases are due to partial interruptions in the connecting fibers between the primary (apperception) and secondary (memory) brain centers.

In certain cases loss of ability to read takes place through injury or disease. This is technically known as alexia<sup>1</sup> and is due to lesions in the left angular gyrus which is the area of the brain which "has been fixed upon as the center for recording images or memories of printed or written words."

#### POOR AUDITORY MEMORY

Some pupils are unable to hear at all and must be taught to speak and to read by methods appropriate for deaf children. Other pupils hear indistinctly and frequently fail in reading because they are not seated so they can hear the pronunciation of words clearly. Teachers should be on the alert for such cases and should provide appropriate seats and individual instruction to clear up difficulties. A somewhat more subtle difficulty is failure to remember what has been heard. This frequently results in inability to remember the sounds of words and consequently in confusion or even complete failure in reading. The following case reported by G. W. Willard, Seattle, Washington, describes somewhat briefly the unusual technique which was used in securing improvement in the reading accomplishments of a girl who had poor auditory memory.

A girl ten years of age, who entered school at six and attended regularly four different schools, had great difficulty in reading in the second reader. She was tested at the Child Study Laboratory and found to have normal mentality, but very poor auditory memory. The child would sound a letter

<sup>1</sup> Charles H. Judd, *op. cit.*, p. 123.

and call it another letter. The teacher soon found that she had no conception whatever of phonics, and in fact could not pronounce a word after the teacher had sounded it. She also had difficulty in making the right sounds. She evidently had never learned to listen, and various methods were tried but of no avail until the method used with deaf children was tried. The child would put her finger tips on the teacher's throat to get the vibrations. By this method the child got an idea of sound and since she had unusual rhythm, that was utilized in the phonetic work. Her difficulties were gradually overcome. She was returned to her grade and at present is having no difficulty.

#### DEFECTIVE VISION

The fact is recognized that permanent serious defects in vision frequently preclude the possibility of learning to read. There are, however, many failures in reading each year caused by defective vision which could be remedied through the use of appropriate lenses. The following description<sup>1</sup> of a third-grade boy who was unable to score in oral reading before he was supplied with proper glasses emphasizes the importance of careful examinations of the eyesight of children who encounter difficulties in reading.

A third-grade boy was unable to make any score on the Gray Oral Reading Test. Since he was suspected of being feeble-minded, he was given the Binet test. This test showed him to be normal mentally; and accordingly further effort was made to find the cause of his poor reading. His eyes were tested with the letter chart and seemed normal. When questioned, however, he reported that the letters looked as if "someone had put a wet blotter on the book" and blurred them. His eyes were treated and fitted with glasses; and at the close of one year he scored 39 on the Gray Oral Reading Test.

#### A NARROW SPAN OF RECOGNITION

A narrow span of recognition, which means the recognition of a very short unit of a printed line at each fixation of the eyes, frequently explains slow rates of silent reading and monotonous, inaccurate oral reading. C. T. Gray<sup>2</sup> has made a series of investigations to determine whether or not the span of recognition can be increased through the use of short-exposure exercises and speed drills in silent reading. In commenting on the results of short-exposure exercises, he makes the following statements:

It seems that positive results can be obtained if the training is undertaken as early as the fourth year. In the light of these facts it may be repeated

<sup>1</sup> E. E. Keener, *op. cit.*, pp. 205-6.

<sup>2</sup> C. T. Gray, *Types of Reading Ability as Exhibited through Tests and Laboratory Experiments*, Supplementary Educational Monographs, I, No. 5 (August, 1917), 159-60.



here that without doubt the type of training which is given in primary work by means of the flash cards is a very important element in the early training in reading. It is also clear that the foregoing results indicate the desirability of a better grading and control of such work. Incidentally the result makes it clear that training must come at the time in a child's development when it can produce results. Late training is often not effective.

#### INEFFECTIVE EYE-MOVEMENTS

Pupils frequently fail to establish the habit of moving the eyes from left to right along the lines and of making accurate return sweeps from the end of one line to the beginning of the next. These failures may be due to word or meaning difficulties, to poor co-ordination of the eyes, to poor instruction, to guessing, or to carelessness. The case referred to in the opening paragraphs of chapter i is an excellent illustration of failure in reading because of ineffective eye-movements.

#### INADEQUATE TRAINING IN PHONETICS

Recent experiments have shown that some children are able to learn to read very well without any systematic training in phonetics. Other children in the same class fail because they are unable to recognize words independently, but when given supplementary training in phonetics and word analysis they are able to make up their deficiencies. The following case reported by G. W. Willard, Seattle, Washington, illustrates the large amount of help which one child received through individual instruction in phonetics.

A girl 8 years of age in the second grade was unable to read. She was tested at the Child Study Laboratory and found to be normal mentally, and she was also normal physically. She entered the Restoration Class. Study showed that she had no phonetic foundation and was unable to memorize all the new words introduced and consequently was very much confused. An attractive phonetic chart of the various families was made. Little stories were introduced to arouse the child's interest. A game was organized in which the teacher sounded the words and the child pronounced them. This was played for two weeks until the child expressed a wish to change the game and sound the words and have the teacher pronounce them. It was discovered that the child had a real fear whenever she was asked to sound words. Confidence being established, she was taught to read and was returned to her grade in two months. The report shows that at present she is having no difficulty.

#### INADEQUATE ATTENTION TO THE CONTENT

In contrast to the case which has just been described, many pupils fail in reading because they give too much attention to word recognition

and not enough to content. Inadequate attention to the content proves very disastrous in many cases, resulting in ineffective oral reading and poor interpretation in silent reading. The summary<sup>1</sup> which follows illustrates the need of giving more emphasis to the content in many cases.

The conclusion was arrived at that for this child, at least, phonetic drill had been carried beyond the point where it was useful. Instead of being the means to the recognition of word meaning it had become an end in itself, and really blocked the recognition of the meaning. The treatment, therefore, had as its first object the short-circuiting of this roundabout association and the attempt to develop a more direct association between the sight of the words and their meaning. For the time being, then, all phonetic analysis was abandoned, but later on some attention was given to the syllabication of words in order to develop the recognition of the typical sounds represented by the different letter combinations. But this analysis was always made with real words, and the habit of recording letters as mere sounds was broken up.

#### AN INADEQUATE SPEAKING VOCABULARY

Foreign-born children and children reared in homes where a foreign language is spoken frequently fail in reading because of inadequate speaking vocabularies and poor language habits. The case<sup>2</sup> which is reported in the following paragraph is an excellent illustration of a foreign child who was seriously handicapped in reading because of a meager speaking vocabulary.

This boy was in the third grade when the study of his case began. Polish was the only language spoken in the home and mail-order catalogues were the only reading materials found there. He did not enter school until he was approximately nine years old. On account of his size and age he was placed in the second grade and transferred the following year to the third. When given the Gray Oral-Reading Test he made fourteen substitutions in three paragraphs. They entirely destroyed the meaning of the paragraphs and showed clearly that reading was for this boy merely a process of word calling. Remedial training was given first in oral reading and word analysis. These were soon discontinued for a time in favor of conversation lessons about things in which he was interested. "Topics relating to the making of a kite, fishing, etc., were discussed. At the close of a period the discussion was summed up in a few sentences which the teacher wrote upon the board as the boy gave them. This was then made the story for oral reading in that lesson." Numerous types of language and informal reading exercises were given before

<sup>1</sup> Frank N. Freeman, "Clinical Study as a Method in Experimental Education," *Journal of Applied Psychology*, IV (June-September, 1920), 126-41.

<sup>2</sup> C. J. Anderson and Elda Merton, *op. cit.*, pp. 783-85.

readers were used again. When lessons were finally assigned from them, stories were chosen of boys' experiences and of animals from the *Elson First Reader* and the *Beacon Second Reader*. "Each lesson showed a slow but gradual growth in reading power."<sup>1</sup>

#### A SMALL MEANING VOCABULARY

American children frequently live in communities and homes in which they hear only a very limited speaking vocabulary. As a result they early encounter words in their reading lessons which they may be able to pronounce but which they do not understand. Consequently they fail in the interpretation of many passages. The following report<sup>2</sup> describes the case of a seventh-grade pupil who ranked low in comprehension because of a small meaning vocabulary.

This seventh-grade boy was fourteen years and ten months old when his training began. "His teachers report him as a shy, timid boy, easily embarrassed, lacking in self-confidence and initiative in the classroom, though very energetic and responsive on the athletic field. . . . He reads in a dull, monotonous tone, slurring words and phrases. When asked to tell what he has read, he reproduces a few ideas in short, scrappy sentences, for apparently he makes few associations as he reads. His teachers in history and geography explain his poor standing in their subjects as attributable to inability to get ideas from the text. He apparently reads as rapidly silently as any in the class but gets and retains less of the thought." A careful diagnosis of the case led to the conclusion that he had acquired ability to pronounce words which exceeded very much his ability to understand their meanings. Remedial training was carried on for eighteen weeks for the purpose of building up a background of meanings and of improving his ability to understand what he read. Oral- and silent-reading lessons were assigned; words were studied in the context for meaning; and detailed studies were made of prefixes, suffixes and stems. At the conclusion of the training period tests were given again in both oral and silent reading. The remedial instruction had apparently affected the mechanical side of his reading very little. On the other hand, there was marked improvement in his comprehension of what he read.<sup>1</sup>

#### SPEECH DEFECTS

Speech defects have been reported as responsible for failures in oral reading. For illustration, a report was received concerning a boy who talked through his teeth and distorted his mouth to such an extent while speaking or reading that he was considered a complete failure in

<sup>1</sup> A condensed summary of the original report.

<sup>2</sup> Charles H. Judd, *op. cit.*, pp. 106-18.

oral reading. The report which follows describes the case of a third-grade boy who stuttered. The case was reported by Miss Margaret Yazer, Virginia, Minnesota.

John is a nervous and self-conscious child. He has always stuttered, but this handicap has been more serious since an attack of diphtheria. Very remarkable results were obtained by reading aloud with him, allowing him to skip or stop whenever he wished to. He recovered quickly as a rule and continued to read. As these exercises continued he encountered difficulty less and less frequently. After several months, his teacher submitted the following report:

"His improvement as to stuttering continues to be very marked. At present he even volunteers to recite all by himself, a thing unheard of before. He does not always succeed, and it seems to me that two factors enter in when he fails: (1) Excitement, embarrassment, or nervousness may bring back the old stuttering habit. (2) There is a decided difference in his success based on the particular word that he chooses with which to begin his opening sentence. All words beginning with *b*, *p*, *l*, *a*, and *o* were practically impossible for him at first. They produced a dead halt and paroxysms of the throat, often followed by complete rout and confusion. Today, due to a little game constantly played by himself and the teacher in a jolly way, he recognized these letters as definite obstacles to be overcome. He has completely mastered *p* and *l* and is never entirely defeated by the others."

#### LACK OF INTEREST

Many cases have been reported in which failure was attributed to lack of interest or to a positive dislike for reading. In some of these cases, it has been found that lack of interest in reading was due to some fundamental difficulty such as dyslexia, poor auditory memory, or visual defects. The following case which was reported by Miss Gracia Moss is typical of many similar cases in which lack of interest is due to a combination of causes.

The subject of this study was ten years old when the investigation began. Her school history revealed the fact that she had always been considered a poor reader. The first time we had a silent-reading period she looked bored and disgusted. On inquiry it was found that she had never been taught to read silently and that she had been required to give her attention mainly to the correct pronunciation of words and had never had her attention directed to the meaning. When she was asked to read for herself, she replied, "I hate reading and I'll always be a poor reader." The most important problem in remedial instruction was to stimulate a real interest in reading. A simple story of adventure was chosen first and read with her. She showed some signs of interest. A number of stories were begun in class and she finished

them herself. In a short time she had a book on her desk all the time, and when her other work was finished she read silently. She found in time that she could derive pleasure from reading and that she could read selections silently which she could not read aloud successfully. By the end of the third month she had read twenty-five books in the school library and was securing books regularly from the city library. At the end of the first semester she was not only an effective silent reader but had also become a very good oral reader.

#### GUESSING VERSUS ACCURATE RECOGNITION

Some pupils who encounter difficulties in learning to read adopt various devices for making satisfactory recitations, such as memorizing the passages read by other children. G. W. Willard, Seattle, Washington, describes the case of a boy who depended on guessing to such an extent that he failed notably in independent reading. The report illustrates the great value of a strong motive in overcoming poor habits and in establishing appropriate ones.

A boy entered school at six years of age in 1919 and remained in the first grade until February, 1921. He was tested by the Child Study Laboratory and found to have normal intelligence. He was sent to the Restoration Class. It was found upon investigation that he had a reading vocabulary of twenty words. He had a very bad habit of guessing. It was discovered that he was very much interested in animal stories. With this as a cue, animal stories were read to him. He made an animal book by cutting out and pasting pictures of animals. Then he told simple stories about animals. These the teacher printed in his book. After two weeks, the boy wished to print his own stories. The teacher printed the stories on the board and the boy with a small printing press printed the stories in his book. This book he was so proud of that he wished to take it home so he could read the stories to his mother. The motive was sufficiently strong to help him break up the habit of guessing. In six months he was reading in the second reader. He was returned to his grade and is having no difficulty.

#### TIMIDITY

Numerous cases have been reported recently of failures in reading due to timidity or lack of confidence. The case described in the following paragraph was reported by G. W. Willard, Seattle, Washington.

A boy eight years of age of normal intelligence had attended school two years regularly and was still in the IB class. Teacher's report: "Very poor word memory. No phonetic sense. Stubborn. Does not enter into any of the school activities. Will take no part in the conversation." He entered the Restoration Class. The teacher found the boy to be extremely timid. For

two weeks he answered in monosyllables. Various pictures and stories were used to find his line of interest. His interest was discovered when the picture of a Red Cross dog was shown to him. Using this as a cue, all sorts of pictures and stories of other dogs were used. At last a book was given to him and he was asked to read the story. In place of reading he told the story from memory. Confidence was established and the rest was easy. It was discovered that the boy had a good sense of sound and by individual work a phonetic basis was laid. The rapidity with which he progressed led us to believe that it was extreme timidity that was at the root of the trouble. He was returned to the second grade and the follow-up-report shows that he has had a double promotion and is a fluent reader.

#### SUMMARY

Fourteen possible causes of failure in reading have been briefly described. They are inferior learning capacity, congenital word blindness, poor auditory memory, defective vision, a narrow span of recognition, ineffective eye-movements, inadequate training in phonetics, inadequate attention to content, inadequate speaking vocabulary, a small meaning vocabulary, speech defects, lack of interest, guessing, and timidity. There were many causes of failure reported which have not been described in this chapter, such as inappropriate reading materials and ineffective teaching. The fact that there are so many causes of failure in reading emphasizes the importance of deliberate studies of individual difficulties before remedial instruction is organized.

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## CHAPTER III

### METHODS EMPLOYED IN THE STUDY OF INDIVIDUAL CASES

#### GENERAL PLAN

The investigations reported in the chapters which follow were undertaken to determine significant types of remedial cases, their important characteristics, the causes of difficulty in each case, and appropriate kinds of remedial instruction. Twenty-five children whose cases were studied in detail were secured from the University Elementary School, the school of the Orthogenic Department of Rush Medical College, and a public school of Chicago. In addition two children were brought to the reading laboratory by their parents. Children were selected for examination by three methods. In the University Elementary School, seven were referred by classroom teachers to the reading laboratory as soon as it was discovered that they were encountering serious difficulties in reading. In the Orthogenic Institute, four were selected for special study after a preliminary investigation had been made of the reading accomplishments of all the pupils. In the city public school, fourteen pupils were selected for investigation after several standardized reading tests had been given in various classrooms. The tests were administered to four pupils of each classroom who were reported by their teachers as very poor in reading.

As soon as a pupil had been selected for diagnosis, he was given tests and reading exercises for a week or more for the purpose of determining the general character of his reading difficulties. The results of the tests were analyzed and interpreted. His classroom reading was observed and a careful analysis was made of the errors which he made. His school history was studied to determine possible explanations for his difficulties. Information was also secured from his parents and teachers. After a tentative conclusion had been reached in regard to his case a remedial program was planned. From twenty-five to thirty minutes of individual instruction was given each day for several weeks. No opportunity was lost during remedial exercises to discover additional facts concerning his reading habits. In some cases it became necessary to revise the original diagnosis and to adopt a new plan of remedial instruction. At the end of the period of training, check tests were given



to determine the amount of progress which had been made. In this connection different forms of the tests used in the diagnosis were given, if they were available. In a few cases it was possible to give tests several weeks after the training was discontinued to determine if the improvement had been permanent.

#### THE TECHNIQUE OF DIAGNOSIS

Use was made in these investigations of the methods of diagnosis which have been reported in previous studies. The methods which were available were relatively few in number and it was necessary to supplement them in individual cases with tests which were of value in securing various types of information. After several studies had been made, it was decided to organize each investigation around three major steps. These were not always taken in the same order because the pupils were selected by different methods. In general, however, the following order was observed.

1. A study of the child's history was made at the beginning to secure facts which might aid in determining the specific difficulties which he encountered. Later, his history was reviewed to find a possible explanation for poor work and for any unusual difficulties. Facts concerning his history were secured from school records, teachers, and parents. In some cases it was impossible to secure sufficient reliable information to make effective use of it in the diagnosis.

2. A preliminary diagnosis was made of the child's reading accomplishments through the use of standardized tests. A careful analysis was made of the results of these tests in order to determine in which phases of reading he encountered serious difficulties. A general intelligence test was also given to determine his probable learning capacity.

3. A more deliberate analysis of his reading difficulties was usually made through the use of informal or unstandardized tests. This step was necessary because the standardized tests frequently failed to provide sufficient information to insure an accurate diagnosis. In some cases these informal tests were modifications of standardized tests; in other cases they were based on selections in readers. Before the specific nature of a child's difficulties was accurately determined it frequently became necessary to observe his classroom work, to secure information from his teachers concerning his reading errors and difficulties, to compare with him a good reader for the purpose of determining differences, and to make use of the child's own introspections and comments.

## HISTORY OF CASES

As soon as a pupil was selected for study, an effort was made to find out as much as possible concerning his past history. This was a very important step because an explanation for his failure could frequently be secured only from his past record. In order to systematize this part of the study a blank containing more than one hundred items was prepared through the co-operation of L. W. Miller and more than one hundred supervisors and teachers of reading. The main headings of the blank were: Home Conditions; Physical History and Condition; Mental Characteristics, Temperament, and Play Activities; School History; Reading History; and Present Status in Reading.

The points which proved to be most valuable under "Home Conditions" were (a) nationality of parents, (b) language most used in the home, (c) attitude of parents toward child, and (d) home provisions for reading and conversation. Under "Physical History and Condition" information concerning (a) general physical conditions, (b) nutrition, and (c) visual, auditory, and speech defects proved to be very helpful. Under "Mental Characteristics, Temperament, and Play Activities" the teacher's answers to the following questions were usually very suggestive: Is the child timid or aggressive, industrious or lazy, careful or careless, independent or dependent, co-operative or individualistic? How and where is time before and after school usually spent? The remainder of the outline is here reproduced.

## SCHOOL HISTORY (OTHER THAN READING)

1. Pedagogical index:
  - a) Grade now in?
  - b) Years in school?
2. Grade or grades "skipped"? Why?
3. Did pupil ever fail to be promoted? Why?

Grade	School Attended	Kind—City, Country, Public, Parochial, Private	Age at Entering	Number of Years in Grade	Descriptive Statements Concerning Quality of Work
Kindergarten.....	.....	.....	.....	.....	.....
First.....	.....	.....	.....	.....	.....
Second.....	.....	.....	.....	.....	.....
Third.....	.....	.....	.....	.....	.....
Fourth.....	.....	.....	.....	.....	.....
Fifth.....	.....	.....	.....	.....	.....
Sixth.....	.....	.....	.....	.....	.....
Seventh.....	.....	.....	.....	.....	.....

4. Average grade or mark given thus far this year in each subject taken by the pupil

Subjects	Grade	Other Subjects	Grade
Reading .....	.....	.....	.....
Spelling .....	.....	.....	.....
Language .....	.....	.....	.....
Writing .....	.....	.....	.....
History .....	.....	.....	.....
Geography .....	.....	.....	.....

5. Is slow progress in any subject due to difficulties in reading? (Comment in detail)
6. Has attendance been regular? Causes of irregularity and amount?
7. Attitude of
- Pupil to teacher?
  - Pupil to school?
8. Does child use library? How much?
9. Additional facts concerning school work other than reading which might explain cause of slow progress in reading?

#### READING HISTORY

- Before the child entered school, were the conditions in the home such as to stimulate an interest in books and a desire to read?
  - Was instruction attempted?
    - Amount and character?
    - Success?
- Was instruction in reading given in the kindergarten?
  - Amount?
  - Character?
- Type of instruction in primary grades?
  - Basic method used, if any?
  - Was reading for content stressed?
    - Did he acquire habits of intelligent reading?
  - Was instruction given in phonetics and word analysis?
    - Did he become an independent, fluent reader?
  - Extent of opportunities for supplementary or library reading?
    - Amount of voluntary reading?
    - Kinds of selections chosen?
- Character of instruction in grades IV, V, and VI?
- Has reading development been fluctuating or uniform?
  - When was difficulty first noticed?
    - Nature of difficulty?

6. Has he ever had remedial work ?
  - a) When ? Purpose ?
  - b) How long continued ?
  - c) Methods employed ?
  - d) Results ?
7. Additional facts in reading history which might explain present difficulties in reading ?

## PRESENT STATUS IN READING

1. Oral (answer the following questions in detail):
  - a) In what phases does he excel ?
  - b) What are his characteristic weaknesses ?
2. Silent (answer the following questions in detail):
  - a) In what phases does he excel ?
  - b) What are his characteristic weaknesses ?
3. What reading difficulties, if any, are evidenced in content subjects, such as history, geography, science ?
4. What are the amount and character of the pupil's outside or supplementary reading ?
5. Probable causes of reading difficulties
  - a) Does he express himself in English as well as the average pupils in his grade ? If not, in what way is he deficient ?
  - b) Is his vocabulary adequate ?
    - (1) In speaking ?
    - (2) In understanding what he hears.
  - c) Are his experiences adequate for the comprehension of what he reads ?
  - d) Additional significant causes ?
6. Special interests of pupil which may be used in overcoming reading difficulties:
  - a) In school subjects ?
  - b) In outside activities ?
7. Additional facts of significance ?

## PRELIMINARY DIAGNOSIS

A study of the reading accomplishments of a pupil was made through the use of standardized tests, for two purposes: (a) to determine the phases of reading in which he was relatively strong or weak; and (b) to determine the extent of his deficiencies by comparing his scores with standard scores. Little or no use was made in these diagnoses of "Educational Age," "Educational Quotient," and "Accomplishment Quotient" because only a limited number of tests have been so organized that these measures of efficiency can be used to advantage. In order to secure information concerning all of the more important phases of

reading accomplishment, the following standardized tests were used: the Gray Oral Reading Test; the Courtis Silent Reading Test, No. 2; the Burgess Scale for Measuring Ability in Silent Reading; the Thorndike-McCall Silent Reading Test; and the Monroe Silent Reading Test. Whenever the Monroe test was given, only the comprehension score was used. Furthermore, the Thorndike-McCall and the Monroe tests were seldom used in the same diagnosis unless there were serious questions concerning the validity of the score in the test which was given first. The Haggerty Reading Examination, Sigma I, was used in a limited number of cases in which the subjects were unable to score in any of the more difficult silent-reading tests. Inasmuch as all of these tests have been described and their validity discussed in numerous recent bulletins and magazine articles, they will not be described at length in this monograph. Bibliographical references are included at the end of this chapter for the use of those interested in making a careful study of the tests which were used.

As a rule, a standardized test was given only once in a preliminary diagnosis. If, however, there was any evidence that the score was not a true measure of the pupil's accomplishment a different form of the same test was given in order to check the results of the first test. The reason for not following a more rigorous procedure lies in the fact that the preliminary diagnosis was followed by a detailed study of the difficulties encountered by pupils in informal tests or in reading exercises.

In the preliminary diagnosis, a measure of the pupil's general intelligence was secured through the use of one of a number of tests. Whenever a pupil was tested individually the Stanford Revision of the Binet-Simon Intelligence Tests was used. Frequently, it was convenient to test several pupils at the same time. In such cases, the Illinois Intelligence Test was used. In still other cases, the pupils had been carefully tested with the National Intelligence Tests a short time before the diagnoses of their reading difficulties were undertaken. Inasmuch as these tests had been given under unusually satisfactory conditions, the scores were adopted for use in this investigation. There were two reasons for giving intelligence tests in connection with the present investigation: first, it has been found that there is a very high correlation between general intelligence as measured by these tests and a pupil's ability in reading; and second, intelligence tests provide information concerning a pupil's probable learning capacity. The statement should be added, however, that some pupils who rank low in an intelligence test make satisfactory, and even very rapid, progress in reading when they are given appropriate instruction.

## DETAILED DIAGNOSIS THROUGH THE USE OF UNSTANDARDIZED TESTS

The preliminary diagnosis frequently failed to reveal the exact nature of a pupil's difficulty. In order to secure additional information the diagnosis was continued through the use of unstandardized reading tests designed to secure special types of information. In some cases, these were modifications of standardized tests.

Several tests were used in studying a pupil's difficulty in the recognition of words. At first, the Jones Vocabulary Test was given. This test includes 118 phonetic words and 196 sight words which appeared most frequently in ten widely used primers. It was found, however, that the test required too much time and that equally satisfactory results could be secured with a shorter list. Accordingly, 100 words were selected from the two lists in the same proportion in which they appear in the original test. The test which was formed from these words is referred to in later discussions as Word Recognition Test A.

Whenever a pupil encountered serious difficulty in Word Recognition Test A, he was given Word Element Test A in order to determine his mastery of simple phonetic elements. This test consists of two parts. The first includes 80 words such as *back*, *fed*, *ill*, *now*, and *cut*, which contain the phonetic elements which are emphasized most frequently in eighteen manuals of primary reading. The purpose of the first part of the test was to determine whether pupils were able to recognize words in sentences which they were unable to recognize when presented individually. Each word was printed on a card. A sentence containing it appeared on the back of the card. Each word was presented first in isolation. If a pupil failed to recognize a word, the sentence containing it was presented. The second part of the test includes words which contain the phonetic elements to which reference has just been made. The words were so arranged on the test sheet that those having the same word endings and those having the same initial consonants appeared in couplets. The first ten couplets in each list follow:

back	smack	bake	bent
tail	snail	call	cold
cake	flake	den	dog
all	fall	fed	fame
came	shame	get	gum
an	plan	hand	hut
at	vat	jail	jut
and	stand	kind	keen
lace	trace	log	luck
mash	splash	meet	mop
sale	whale	neat	nest

The test was given by asking a pupil to pronounce the word *back* which was typewritten on a card. If he was unable to recognize the word, it was pronounced for him. He was then asked to pronounce the word *smack* which appeared on the same card. If he was unable to do this, the common element *ack* was pointed out. It was assumed that if a child had received some phonetic training and was familiar with the elements of words he would be able to pronounce the word *smack*. In order to test his knowledge of the sounds of word elements, a pupil was next asked to give other words containing *ack*. The test revealed some very interesting facts. For example, if pupils were unable to give other words containing *ack*, it was discovered that in some cases they could not hear distinctly and that in other cases they were in need of training in the recognition of sounds.

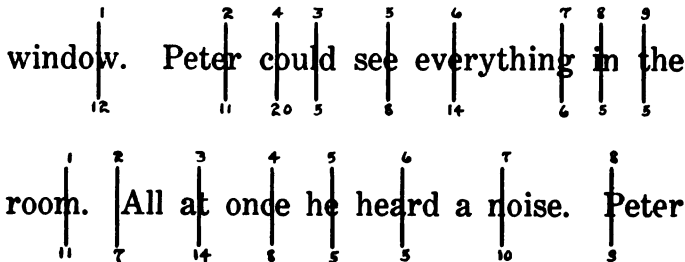
The great difficulty encountered by some pupils in recognition suggested the possibility of defects in visual memory. Accordingly, Test 13, Part I of the June, 1919, Series, of the National Intelligence Tests, was given. This contains twenty drawings and numbers which are to be looked at on one sheet and then located on another sheet. According to the directions which accompany the test, the subject looked at Figure 1 long enough to get it clearly in mind. He then turned to the next page of the folder which contained a large number of similar figures, found the appropriate figure, and wrote "1" under it. The same procedure was followed in the case of the remaining nineteen items of the test. Wide differences were revealed in the ability of pupils to perform this test.

If a pupil read very slowly, either orally or silently, he was given short-exposure tests through the use of a drop tachistoscope in order to determine the accuracy and span of recognition. The materials used in the tests included the twenty-six letters of the alphabet, eighteen two-letter words, and ten of each of the following: two-letter non-sense syllables, three-letter words, three-letter non-sense syllables, four-letter words, four-letter non-sense syllables, two-word phrases, and three-word sentences. Each item was presented until it was accurately recognized and the number of necessary exposures recorded. In the cases of pupils who encountered serious difficulties in recognition, a given item was not exposed more than ten times.

In order to study a pupil's habits of recognition in terms of the behavior of his eyes while reading, photographic records of his eye-movements were secured in both oral and silent reading by Dr. G. T. Buswell. A reproduction of a portion of a silent-reading record appears in Plate I.

A word of explanation is necessary in order that such records may be interpreted readily. The vertical lines drawn through the words indicate the points of eye fixations. The numbers above the vertical lines indicate the order of fixations. The numbers at the lower end of the lines indicate the lengths of the fixations in twenty-fifths of a second. In the first line of the record the first fixation occurred in the word *window* and remained there for twelve twenty-fifths of a second. The second fixation occurred in the word *Peter* and remained there for eleven twenty-fifths of a second. The fourth fixation occurred to the left of the third fixation. A movement to the left, such as occurred between the third and fourth fixations, is known as a regressive movement. The movement from the end of the first line to the beginning of the second is known as a

## PLATE I



return sweep. In the analysis and interpretation of these records use was made of the grade standards reported by Dr. G. T. Buswell.<sup>1</sup>

It was usually necessary to supplement the facts secured through the use of the tests, which have been described, by information secured through informal tests of oral and silent reading. For example, when a pupil encountered difficulties in interpretation, it was frequently advisable to find out the kinds of selections which caused the most difficulty, such as fairy stories, passages containing a series of important facts, or passages which require independent thinking. Whenever there was need of such information, passages were selected from texts which were adapted to the purpose at hand. Brief descriptions of two of these informal tests follow:

a) In order to test a pupil's ability to get the main points of a story and to reproduce the essential facts in correct sequence a selection such as "The New Voices," *Elson Primary School Reader*, Book II,

<sup>1</sup> G. T. Buswell, *Fundamental Reading Habits: A Study of Their Development*, Supplementary Educational Monographs, No. 21 (June, 1922).



pp. 61-63, was used. Before reading the selection the pupil was given the following directions: "Find out why the animals wanted to change their voices." "Who helped them?" "What did the fox, the wolf, and the hawk do when their voices were changed?" "Why did they not keep their new voices?"

b) The selection entitled "The Little Cook," *Elson Primary School Reader*, Book II, p. 146, illustrates the type of passages used to test a pupil's ability to interpret factual material. The pupil's interest was aroused by calling his attention to the picture at the top of the page. He was then given the following explanation and directions. "The little girl in this story wanted to see George Washington when he visited the next town but she had to stay at home. Read to find out why she stayed at home and how she finally got to see him. Find out why the title 'The Little Cook' fits the story." After reading the selection the following questions were asked:

Where did Betty live?

How old was she?

What had she learned to do?

Why was she alone?

How did George Washington travel?

Describe his coach and horses?

How many horsemen had he? How were they dressed?

Informal exercises similar to those which have been described were organized for a wide variety of useful purposes by the teachers who aided in the diagnostic and remedial work: (a) to test a pupil's rate of reading simple and difficult passages; (b) to determine the kinds of errors made in reading selections orally; (c) to find out the kinds of stories in which a pupil was interested; (d) to determine the length of time a pupil could concentrate in the study of a reading problem; (e) to interpret a fable or an imaginative selection; (f) to follow directions; and (g) to find answers to specific questions. The interpretation of the facts secured through the use of both informal and standardized tests will be illustrated in the descriptions of individual cases in later chapters.

#### REMEDIAL INSTRUCTION

As soon as the nature of a pupil's difficulty had been determined, remedial instruction was begun. The character of this instruction varied so widely that most of it can be described clearly only in the reports of individual cases. On the other hand, several methods and devices were used in different cases with but few changes. In order to

avoid duplication the most frequently used devices are described at this point and will be referred to briefly in the reports which follow.

#### EXERCISES TO INCREASE ACCURACY OF RECOGNITION

Exercises were used to overcome three types of inaccuracies in word recognition.

1. Words which a pupil failed to recognize accurately while reading were used in sentences at the end of each period in order that he might associate them with their meaning. The words which repeatedly caused difficulty were then typewritten on cards and used in quick-perception drills, by presenting them as rapidly as they were recognized. Such words as *again*, *want*, *been*, *does*, and *heard* were frequently emphasized. As soon as a pupil was able to recognize a word readily, drill on it was discontinued. New words were added to the list as difficulties were encountered.

2. Words which a pupil confused because of their similarity in form were emphasized in drill exercises. These words included such groups as *thought*, *though*, and *through*, *there* and *where*, *then* and *when*, *now* and *how*, and *has*, *had*, and *have*. The words were used in sentences before they were presented in quick-perception drills. If unusual difficulties were encountered, words which were similar in form were presented together so that their differences could be studied.

3. Pupils who recognized isolated words accurately frequently made errors in recognizing the same words in phrases and sentences. In order to overcome this difficulty a word, such as *there*, was written on the board in several phrases or short sentences and the pupil was given opportunity to study them deliberately. As soon as he was able to recognize these phrases readily they were typewritten on cards and presented in quick-perception drills.

#### EXERCISES TO INCREASE SPAN OF RECOGNITION

To aid a pupil in increasing his span of recognition, phrases were printed on cards and presented to him rapidly in flash-card, or quick-perception drills. At first, short phrases, such as *one day*, *every time*, *asked she*, *he said*, *very fast*, *over there*, and *as though*, were presented. These phrases were taken from the lessons which he was reading and the list included those which occurred most frequently. As soon as the pupil was able to recognize short phrases, longer and more difficult phrases were used, such as *again and again*, *over the hill*, *around the house*,

*wherever he could, pretty little things, thought to himself, as fast as they could, while I am gone, and as much as he wanted.*

#### EXERCISES TO INCREASE ABILITY IN WORD RECOGNITION

When a pupil had difficulty in recognizing and pronouncing words because he failed to associate sounds and their symbols, he was given some training in phonetics. If he was unable to pronounce a word, such as *fed*, he was given a familiar word, such as *bed*, and was asked to name others ending in *ed*. If he failed to recognize the familiar element *ed* other words, such as *red* and *led*, were supplied. If the initial consonant caused difficulty, other words beginning with *f* were pronounced for him and written on the board. If he had difficulty with the vowel sound, he was given lists of words containing short *e*, such as *met*, *set*, *get*, and *hen*, *when*, *den*. After several different endings and initial consonants had been used with short *e*, a chart containing such words as *let*, *pen*, *tell*, *fled*, and *bless* was presented to test the pupil's ability to recognize short *e* in various combinations. After all short vowel sounds or all long vowel sounds had been given, similar charts were prepared and used as a final test of recognition. This method prevented a child from depending entirely on so-called "families" in recognizing words. Initial consonant blends, vowel digraphs, and phonograms were taught in the same way.

In the cases of many pupils certain rules of pronunciation were given in addition to the exercises which have just been described. The rules which proved most helpful follow.

1. When there is only one vowel in a word or syllable, that vowel is usually short as in *can*, *met*, *hit*, *not*, and *cup*.
2. When a one-syllable word ends in *e*, the *e* is silent and the preceding vowel is long, as in *lame*, *hope*, and *write*.
3. When there are two vowels together in a word or syllable, the first one is usually long and the second one is silent, as in *beat*, *rain*, and *coat*.

#### EXERCISES TO AID IN INTERPRETATION

1. When a pupil had difficulty in interpreting the important points of a story and in reproducing the story in correct sequence, he was assigned a short selection which was sometimes divided into thought units. The page was cut as illustrated and the paragraphs were mounted with wider spaces between them than in ordinary print in order to emphasize each thought unit.

## BILLY THE CROW

Bill, the crow, was very fond of corn. He used to go to the farmer's field at day break. He would call all the other crows to come too.

The farmer said, "I cannot let you eat all my corn." So he made a scare-crow and put it in the field, but that did not frighten Billy at all. Then the farmer said, "I will get my gun and shoot those crows!"

Billy did not get shot, but he was so frightened that he left the farmer's corn alone. He told all the other crows to keep away too.

The pupil was asked to read one paragraph at a time and to tell what he had read. If he failed, he was asked such questions as "Who was Billy?" "What did he like?" "Where did he get it?" "Who went with him?" If he could not answer the questions he was asked to re-read the passage. As soon as he was able to answer questions concerning the content of short passages accurately, the length and difficulty of the passages were increased.

2. Selections similar to the one which follows, taken from Searson and Martin's *Studies in Reading, Book II*, were used in training pupils to read a story and to answer questions based on its content. For convenience, these passages and their questions were cut from the book and mounted on cardboard. The child was asked to read a selection silently and to answer the questions. In early exercises of this type the reading of the passages was prefaced by a brief discussion and by a study of the questions. In later exercises he read the passage first and then answered the questions as he read them.

## THE TIMID RABBITS

Long ago some rabbits lived in the woods with other wild animals.

When the lion roared, or the tiger even passed by, the rabbits trembled with fear.

"What shall we do?" asked a timid little rabbit. "I am afraid of the lion and the tiger. I know they will soon eat us."

"What was that? I'm afraid—"

"Let us jump into the lake," said another. "It is better to be dead than to live in such fear."

So the timid little rabbits ran to the lake as fast as they could.

Some frogs heard them. The frogs were afraid and jumped with a splash into the lake.

"See, the frogs are more timid than we are. They are afraid of us," said a wise old rabbit, "Why, then, should we want to die?"

And they all ran back to their homes in the woods.

#### QUESTIONS

1. Of what were these rabbits afraid?
2. What tells how much afraid they were?
3. What did they start to do?
4. What happened as they came to the lake?
5. What did a wise old rabbit say?
6. Then what did the rabbits do?

3. After a pupil had made marked progress in the accurate interpretation of simple passages through such exercises as 1 and 2, more difficult questions and directions were frequently assigned to train him to interpret the content of a story more critically, to execute directions, or to think independently about what he read. Illustrative questions based on the selections used in the two preceding exercises follow.

#### BILLY THE CROW

1. How did Billy show that he was a friend of the other crows?
2. Do you think the farmer did right? If you do, draw a line under the word "right"; if you do not, draw a circle around it. Why do you think so?

#### THE TIMID RABBITS

1. To what extent were the rabbits wise in overcoming their fear of other animals?
2. Draw a line under the word below that tells which rabbit saved the lives of the others.

little

wise

large

#### SIGNIFICANT STATEMENTS CONCERNING REMEDIAL INSTRUCTION

In concluding this brief discussion of methods of remedial instruction the following significant statements should be made. (1) The methods which have been described illustrate only a very small number of the methods which were employed. (2) Remedial instruction was not limited to exercises of the type which have been described but consisted for the most part of methods used by a skilful teacher in regular classroom instruction. The fundamental difference was that the pupils

were taught individually rather than in groups. (3) Whenever a specific difficulty had been located and remedial exercises given, an attempt was made to continue instruction until the pupil had substituted appropriate habits for inaccurate ones in all of his reading activities. In many cases it was impossible to secure entirely satisfactory results in the time devoted to this investigation.

#### PLAN OF REPORTING INDIVIDUAL CASES

At the end of the training period, detailed descriptions of the cases were prepared. In this connection an attempt was made to describe for each case the significant difficulties which were encountered, the causes as far as they could be determined, and the remedial instruction which was given. The cases were then classified into the following general types: (a) pupils who had made little or no progress in learning to read; (b) pupils who encountered serious difficulties in interpretation; (c) pupils who had encountered difficulties primarily in the mechanics of reading; (d) pupils who encountered difficulties in rate of silent reading; and (e) pupils who had made progress in learning to read but who were weak in practically all phases of reading.

There are doubtless other types of cases which should be included in a complete classification. The five which have just been mentioned were used because the cases studied fall most readily into these groups.

The five chapters which follow contain introductory and summary discussions concerning the types of cases which have been described; also detailed descriptions of individual cases. The final chapter contains a report of the organization of diagnostic and remedial work in Toledo, Ohio, and description of the methods which teachers of Toledo used in remedial instruction. Superintendents and principals will probably be most interested in the introduction and summary to each of chapters iv to viii inclusive, in the brief characterization of each individual case, and in the entire report of the Toledo experiment which is found in chapter ix. Supervisors and teachers of reading may study to advantage each of the chapters which follow. Those who are interested primarily in diagnostic work should read the introductory statements, the reports of the preliminary and detailed diagnoses, and the summary of the diagnosis for each individual case as presented in chapters iv to viii inclusive. Those who are interested primarily in remedial work should read the summary of the diagnosis, the report of remedial instruction, and the results which were secured in each case presented in chapters iv to ix inclusive.

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## CHAPTER IV

### PUPILS WHO HAD MADE LITTLE OR NO PROGRESS IN LEARNING TO READ

The four pupils whose cases are reported in this chapter had made little or no progress in learning to read. Three were in the second grade; the fourth was a twenty-year-old youth who had completed the work of the eighth grade through the aid of oral instruction. It is significant that supervisors and teachers have recently reported pupils from every grade who encounter unusual difficulties in learning to read. Such pupils are unable to make satisfactory progress in most phases of school work because of their reading handicap. Furthermore, they retard seriously the progress of pupils with whom they are classified. It is therefore very important that these pupils be identified as early in the grades as possible and be given special remedial instruction. If it is found in the course of time that some pupils cannot learn to read effectively, a larger amount of oral instruction should be provided for them than for children who read intelligently.

The diagnosis which was made of the four cases under discussion revealed a number of interesting and significant facts. (1) They either failed to score in the reading tests or fell below the standard scores for the first grade. (2) They read slowly, inaccurately, and without expression. (3) They interpreted what they read inadequately, and in many cases inaccurately. (4) They lacked confidence in themselves and were uncertain of pronunciations and meanings. (5) They engaged in reading exercises only with very great effort. (6) They appeared to derive little, if any, pleasure or intellectual stimulus from their reading.

The selection of pupils who belong to this type is relatively simple because of the failure of such pupils in practically all phases of reading. For the same reason it is very difficult to determine the specific causes of failure and to plan appropriate remedial instruction. In the reports which follow, an attempt has been made to describe the distinguishing characteristics of each case, the most significant causes of failure, and the types of instruction which were necessary in overcoming their difficulties.



## CASE A

A SECOND-GRADE GIRL WHO HAD MADE BUT LITTLE PROGRESS IN READING DUE TO PARTIAL DEAFNESS, POOR VISUAL MEMORY, TIMIDITY, AND GENERAL IMMATURITY

*Introductory statement.*—S. D. was almost nine years old when the study of her case began in October, 1921. She was timid and her language habits were undeveloped. Her teachers reported the following significant facts: She was absent frequently on account of illness. She felt no responsibility for progress in her school work and she took little part in group activities. She was below the standard for her grade in most school subjects. She was relatively immature in her habits of thinking. A physical examination revealed the fact that she was partially deaf in both ears and had badly decayed teeth.

*Preliminary diagnosis.*—A preliminary study of the case was made through the use of five standardized tests. The names of the tests, S. D.'s scores, and the standard second-grade scores are included in Table I.

TABLE I

Tests	S.D.'s Scores	Standard Second-Grade Scores
The Stanford Revision of the Binet-Simon Tests . . . . .	92	100
The Gray Oral Reading Test . . . . .	2.5	43
The Burgess Silent Reading Test . . . . .	0	50*
The Courtis Silent Reading Test:		
Rate . . . . .	61	84
Comprehension . . . . .	14	59
The Haggerty Reading Examination, Sigma I:		
Test I . . . . .	6	12
Test II . . . . .	0	8

\* Standard score for the third grade.

The scores indicate that S. D. was below the average in general intelligence, that her oral-reading accomplishment was very little better than that of a first-grade pupil who had been in school only a few weeks, and that she was decidedly retarded in rate of silent reading and in interpretation. An examination of her oral-reading record showed that she read very slowly and scored on only one paragraph. Her major errors were (a) repetitions, (b) total mispronunciations of many simple words, such as *once*, *same*, *bit*, *not*, and *saw*, and (c) substitutions, such as *poor* for *door*, *good* for *poor* and *wanted* for *were*, which indicated that she did not have the content of the passages clearly in mind. These

difficulties in recognition were sufficient to account for her low scores in comprehension.

*Detailed diagnosis.*—In the Jones Vocabulary Test, she made a score of 42 on the sight list and 26 on the phonetic list. Most of the words which she substituted were similar in form to the printed words or contained one or more common elements. For example, she substituted *feet* for *meet*, *boat* for *boot*, *sun* for *sum*, *ran* for *rang*, *cheek* for *cheese* and *window* for *meadow*. Occasionally she substituted such words as *cat* for *pussy* and *turkey* for *goose* in which there was some relation between the meaning of the printed word and the meaning of the word which was pronounced.

Informal tests in oral reading showed that she could not read primer material satisfactorily. They also revealed the following important facts: (1) She read slowly and haltingly because of difficulties in recognition. (2) She recognized individual words rather than groups of words. (3) She repeated frequently in order to correct errors or to get the meaning. (4) She did not keep the content in mind as indicated by the fact that her substitutions changed the meaning. (5) She was familiar with phonetic elements in some combinations but not in others. (6) Her visual memory was poor as illustrated by the fact that she had to be helped frequently with the pronunciation of many simple words and she was unable to remember them from one day to the next. (7) She did not hear sounds distinctly and hence made wrong associations with symbols. Her deafness seemed to be the fundamental cause of her difficulties in recognition. It also led to the inaccurate use of words, such as *what* for *that* and *where* for *there*.

Informal tests in interpretation showed that she could reproduce very little of what she read. When passages were read to her and she was not handicapped by difficulties in recognition, she did very much better. Her answers to thought-provoking questions were usually unsatisfactory. Detailed questioning revealed the fact that she did not direct her attention to the content while reading or think independently about it.

*Summary of diagnosis.*—The diagnosis showed that S. D. was somewhat below normal in intellectual ability. Her low scores in oral reading indicated that she had not yet established reading habits comparable to those of an average first-grade pupil at mid-year. She failed to recognize many very simple words. She recognized individual words rather than words in groups. She often substituted words which were similar in form to the printed words regardless of their meaning. These substitu-

tions indicated that she did not direct her attention to the content while reading. Her rate of silent reading was slow and she was decidedly retarded in the interpretation of what she read because of difficulties of recognition. Other causes of poor interpretation were (a) immaturity, (b) a narrower background of experiences than that common to children of her age, and (c) ineffective habits of thinking. The facts secured in the informal tests showed clearly that most of her difficulties in reading could be attributed to inability to hear distinctly, to poor visual memory, to timidity, and to general immaturity.

*Remedial instruction.*—Remedial instruction was organized to accomplish the following specific purposes: (a) to arouse an interest in reading through the use of very simple, interesting selections; (b) to develop a feeling of responsibility and pride in her work; (c) to establish correct associations between symbols and meanings through vivid presentations which emphasize both meaning and correct pronunciation; (d) to encourage habits of thoughtful reading by directing her attention to the content of what she read; and (e) to increase her span of accurate recognition. After satisfactory progress had been made along these lines, it was planned to give (a) training in phonetics to develop independence in recognition, and (b) more difficult selections and exercises calculated to encourage independent thinking and good judgment. Arrangements were made for thirty minutes of individual instruction each day.

*Arousing interest in reading and developing a feeling of responsibility.*—Reading had been a purely mechanical process in her case. She had not formed the habit of looking for meanings while reading and therefore was not interested. Because of her difficulties in recognition, she was unable to read and interpret selections from second readers satisfactorily. For the first reading exercises, therefore, stories were selected from primers. Her interest was aroused by calling her attention to the pictures or by discussing interesting incidents of the story. For example, such questions and suggestions as the following were given. "What do you think that children in this picture are going to do with the boat? Read the story to find out if your answer is correct." "This boy has a pony. How do you think he got it? Read the story to find out how he got it, how he learned to ride, and where he is going." Informal discussions revealed the fact that many of the experiences described in the simplest stories were new to her and it was necessary to create a background which would enable her to understand and enjoy them. When new situations were explained to her, when meanings of words were

made clear, and when she was given a motive for reading, she usually responded with some evidence of real interest.

*Establishing correct associations between symbols and meanings.—*

In order to establish correct associations, it was necessary to use methods similar to those used with a first-grade pupil who is just learning to read. As a rule, familiar selections were used at first. When an unfamiliar story was used, a part of it was told to her briefly in order that she might be aided in reading through a knowledge of the content. This also helped her to recognize words and prevented many errors. Each sentence or short paragraph was prefaced with a suggestion concerning its content, such as "The next line tells where the boy found his rabbit" or "The next paragraph tells why the dog ran away." She was asked to read such units silently before reading them aloud and was told to ask for help when she encountered words which she did not know. She was then able to read the paragraph aloud with a fair degree of accuracy and fluency. When supplying a word which she did not know, it was necessary to pronounce it very distinctly and to let her see the lips of the speaker in order that she might get its pronunciation accurately.

The words which caused difficulty were pronounced for her when errors occurred and were then written on the board in sentences at the end of the period. Duplicate sentences, phrases, and words were used for matching. Parts of sentences were sometimes erased, leaving the phrases which caused trouble. These were later printed on cards and used in quick-perception drills. Words with which she could make no definite associations, such as *what, where, there, that, this*, etc., caused the greatest difficulty. It was several weeks before she was able to recognize the word *there* at sight while reading, although she encountered it several times each day. After a word had been used in drill exercises it was written on the board in a sentence and left there for several days. Whenever she failed to recognize it while reading, her attention was called to the sentence on the board.

Lists of words beginning with *th* and *wh* were written on the board to help her distinguish between them. Her confusion, no doubt, was due to her inability to distinguish between sounds and to her poor visual memory. After presenting words in sentences for a number of days, isolated words were used in flash-card exercises. Later several of the words which caused difficulty were used in sentences in the same exercise to test her ability to distinguish them. She was then asked to match the isolated words with those in the sentences. These words were also

used in quick-perception drills. Sentences were written on the backs of the drill cards and were used to aid recognition, if necessary.

*Encouraging habits of thoughtful reading.*—In the early sight-reading lessons, her attention was directed to the content of each paragraph by questions or suggestions. She was asked to secure specific items of information while reading, and questions were asked from time to time to test her ability to interpret what she read. Necessary explanations were made. When she failed to answer questions, she was often asked to re-read parts of a story or they were read to her and the important points were emphasized. As soon as she had established the habit of looking for meanings in sight-reading lessons, short units were assigned for silent reading. She was encouraged to think independently about what she read through the use of thought-provoking questions and through discussions about the stories.

*Increasing her span of recognition.*—She was a typical word-reader at first, but by directing her attention to the content and by emphasizing correct phrasing, she was soon able to read more fluently and to group words more effectively. Quick-perception drills also helped to increase her span of recognition.

*Developing independence in recognition.*—Near the end of the period of training some attention was given to phonetics. She had formed the habit of anticipating words by studying the content. Frequently, however, she substituted a word which did not change the meaning materially but which was entirely different in form from the printed word. For example, in the sentence "He went to the stream for a drink" she substituted the word *river* for the word *stream*. It was evident that she gave little or no attention to the details of words. She frequently failed to recognize words in sentences because there was nothing in the content to suggest the right word. For example, in the sentence "Once there was a house," she substituted *mouse* for *house*, thereby changing the meaning. These errors led to the conclusion that some training in phonetics would assist her in accurate recognition and interpretation. Accordingly, her attention was called to the first part of the word *house*. Several familiar words beginning with *h* were written on the board and she was asked to add to the list. Words beginning with *m* were also studied. Other consonant sounds, such as *b*, *p*, *d*, and *t*, were emphasized when she confused them or failed to recognize them. She was also given some help in word endings and certain vowel sounds which caused difficulty. Although instruction in phonetics was little more than begun at the end of the training period, it was clear that she had benefited by it and that further instruction was advisable.

*Results.*—She was frequently absent for several days at a time and was out of school for almost two weeks on account of illness. Although training was continued for eleven weeks, she received remedial instruction for only about eight weeks. She was given the tests again in December. The scores which she made in October, her December scores, and the standard scores for her grade are included in Table II.

TABLE II

Tests	October Scores	December Scores	Standard Second-Grade Scores
The Gray Oral Reading Test.....	2.5	31.25	43
The Burgess Silent Reading Test.....	0	32	50*
The Courtis Silent Reading Test:			
Rate.....	61	68.6	84
Comprehension.....	14	16.6	59
The Haggerty Reading Examination, Sigma I:			
Test I.....	6	13	12
Test II.....	0	9	8

\*Standard score for the third grade.

The scores indicate that she made considerable progress in both oral and silent reading. Although there is no standard given for the second grade in the Burgess test, her score, as compared with the third-grade standard, was satisfactory. Her December scores in the Courtis test were but little better than the October scores and showed that her reading habits were still very immature. It was concluded after the tests had been given that a large amount of individual instruction was still necessary.

#### CASE B

A SECOND-GRADE BOY WHO HAD MADE LITTLE PROGRESS IN LEARNING TO READ BECAUSE OF MALNUTRITION, EXTREME NERVOUSNESS, AND LACK OF INTEREST IN READING

*Introductory statement.*—J. O. was about eight years old at the time this investigation began. His I.Q. according to the Stanford Revision of the Binet-Simon Tests was 117. His father, a successful bank cashier, was quiet, affable, and pleasant. His mother was of a nervous temperament. The parents were keenly interested in the boy's welfare and co-operated to the fullest extent in everything which was done for him.

He was characterized as highly intelligent, dreamy, temperamental, responsible, orderly, and timid, with specialized interests and clever in handwork. He was a malnourished infant and had developed slowly.

It was very late when he began to walk and talk, and he had always been, and still was, under the care of a physician and a nutrition specialist. At the time this experiment began he was about normal in weight. On the other hand, he was about 31 per cent above normal in basal metabolism, which may offer a partial explanation for his extreme physical weakness evidenced by his inability to participate in the recreations of other boys of his age.

He entered the University Elementary School in the autumn of 1920. During the first year he was reported as satisfactory in most of his work. Music and physical training were noteworthy exceptions. His work in reading was reported as unsatisfactory during the second term. His teacher of music reported that he had learned only recently, after great effort, to sing in tune.

*Diagnosis.*—He was unable to score in the Gray Oral Reading Test. The words which were pronounced were recognized slowly and there was little or no attempt at grouping. He was unable to pronounce such words as *wanted*, *without*, *lived*, *with*, *pen*, *feel*, and *what*. There were frequent substitutions and a considerable amount of guessing. In the Haggerty Reading Examination, Sigma I, he was able to do only the first two exercises of Test I. Failure to accomplish more was due to inability to recognize words. Because of the unusual difficulties which he encountered in this connection, Word Element Test A and a visual memory test were given.

In Word Element Test A he missed twenty-two out of thirty first-grade words, which indicated a very limited sight vocabulary. In six of these twenty-two words he was able to determine their pronunciation when they were used in sentences. When two words containing a given phonetic element were presented, he was able, in seven out of twenty cases, to pronounce the second word after the first had been pronounced for him, and the common element pointed out. The large number of failures indicated that his ability to recognize and pronounce the elements of words was distinctly limited. He was able, on the other hand, to give several words containing a given phonetic element, which indicated that he recognized similarities in the sounds of words. The fact that he gave these words very slowly showed that his ability in this connection was not highly developed. In the visual memory test he completed sixteen out of twenty exercises accurately. Inasmuch as excellent readers in the third grade had missed a larger number, it was concluded that deficiencies in recognition could not be attributed to pronounced defects in visual memory.

*Summary of diagnosis.*—The facts brought out in the diagnosis showed that J. O., a boy of high native intelligence, had made but little progress in either oral or silent reading. The unusual number and character of his difficulties in reading were similar to those of a mild case of dyslexia. The characteristics of the boy most likely to retard progress were (a) extreme tendency to nervousness and exhaustion, (b) malnutrition, and (c) lack of interest in reading. The characteristics which favored progress were (a) high native intelligence, (b) ability to work out the pronunciation of some words from the context, and (c) ability to distinguish the sounds of parts of words.

*Remedial instruction.*—Remedial instruction was begun with two very specific purposes in mind: (a) to arouse an interest in reading and (b) to increase his mastery of the mechanics of reading.

Approximately thirty minutes each day were devoted to remedial instruction. The first five minutes were usually spent in arousing keen interest in the story which was to be read that day by relating similar stories, by studying the pictures which accompanied the story, and by exciting his curiosity in regard to some of the details. Approximately fifteen minutes were devoted to reading one or more stories. The plan usually followed was to ask questions which could be answered by reading sentences or paragraphs. If difficulties were encountered the necessary help was given and a record was made of troublesome words. After the meaning of a short unit was clear, it was usually re-read in order to secure additional mastery of fundamental habits and associations. During the remainder of the period, instruction was given which was calculated to increase his ability to recognize words. It is interesting to state in this connection that J. O. had been trained in a class in which phonetics and word analysis had received only a small amount of attention. Although a majority of the children of the class had made satisfactory progress, he and one other boy, both of high native intelligence, had failed to do so.

Several types of training were given in order to increase his ability to recognize words. If the difficulty was with a phonetic word, other words containing the same phonetic element were written on the black-board or selected from a set of printed cards. Their similarities and differences were studied carefully and several minutes were devoted to rapid recognition drills. If similar words, such as *these* and *those*, or *when* and *then*, were confused, flash-card exercises containing these words were conducted or they were written on the board in several short sentences. Evidence of the effectiveness of the remedial instruction



was found in the fact that he soon began to do some independent reading at home. His mother reported that previously he had enjoyed hearing his parents read to him but he had taken no initiative in reading to himself.

*Results.*—To check the progress which had been made the Gray Oral Reading Test and the Haggerty Reading Examination, Sigma I, were given in March, 1922. In January, J. O. had been unable to score in oral reading. In March he made a score of 37.5. In the Haggerty Reading Examination, Sigma I, he made a score of 3 in Test I and in Test II, which showed a small amount of progress over the score of 2 for Test I and 0 for Test II in January. Improvement was also shown by the fact that he did the "Fore-Exercise" of this test without assistance, while in January he was unable to do any of it independently.

#### CASE C

A SECOND-GRADE BOY WHO HAD MADE BUT LITTLE PROGRESS IN LEARNING TO READ BECAUSE OF LACK OF INTEREST IN READING, INATTENTION, AND LACK OF APPLICATION

*Introductory statement.*—C. S. came from an excellent home in which he was surrounded by an atmosphere of culture and refinement. His father was a successful physician and an expert in nutrition. The mother was studious and had taken courses in education. The parents were keenly interested in their children and had secured many appropriate books for them. C. S. had worn glasses for a year or more and had experienced considerable eyestrain. His glasses had been refitted recently by an expert who reported that they were properly adjusted. He entered the University Elementary School in October, 1920, at the age of six. At the end of one year he was promoted to the second grade. His work in the first grade had been satisfactory in all subjects except music. During the autumn of 1921 it became evident that he was encountering serious difficulty in reading and he was referred to a special teacher for diagnosis and remedial treatment.

*Diagnosis.*—His I.Q. according to the Stanford Revision of the Binet-Simon Tests was 129, which indicated that he was distinctly above the standard for his age in general intelligence. He was unable to score in the Gray Oral Reading Test. The chief difficulty revealed was inability to recognize many simple words, such as *once*, *pen*, *saw*, *began*, and *them*. When he was able to recognize words he usually grouped them quite effectively. Whenever difficulties were encountered his reading became slow and laborious and was accompanied by frequent repetitions.

In Word Element Test A he missed eighteen out of thirty simple words which indicated that his sight vocabulary was very limited. In seven of the eighteen errors he was able to pronounce the words when they were presented in sentences. The fact that he was unable to recognize the words in eleven out of eighteen cases indicated that content alone was not a sufficient aid in recognition. When two words containing a given phonetic element were presented he was able to pronounce the second word in eleven out of thirteen cases after the first word had been pronounced for him and the common element had been pointed out. Furthermore, he was able to give other words containing the same phonetic element when the common element was a so-called "family." Considerable difficulty was encountered when the common element was an initial consonant. The letter *r* was particularly difficult for him and he confused the sounds *b* and *d*.

In the Haggerty Reading Examination, Sigma I, which was given as an individual test, he did the first two exercises. In order to do this, however, he had to guess the meaning of some of the words as evidenced by his comments during the examination. He was also able to do the first two exercises of Test II. He marked the right answer in the third exercise, but read audibly, "Can a cat talk?" instead of "Can a clock talk?" From this test and several informal tests which were given, it was clear that he was able to interpret the meaning of what he read after difficulties in recognition had been eliminated.

During the period of remedial instruction, it became evident that some of this trouble was due to his attitude toward reading. He frequently made such comments as "I don't like to read" and "Let's not read this story." The remedial instruction for C. S. and J. O. (Case B) was given at the same time. C. S. usually wanted to read the entire period or not at all. He was unwilling to share or co-operate with J. O. He resorted to various devices in order that he might dictate the procedure and monopolize attention. He was inclined to waste much time through irrelevant comments, apparently to avoid giving the attention and energy required for the reading exercises.

*Summary of diagnosis.*—The diagnosis showed clearly that C. S. was very poor in both oral- and silent-reading accomplishment, his weakness in interpretation being due primarily to difficulties in recognition. Word Element Test A showed that he had not mastered many of the simple phonetic elements well enough to recognize them independently. On the other hand, the test showed that he was able to blend elements into words after the elements had been pronounced for

him. Furthermore, he was unable to derive the pronunciation of words solely from a study of the content although he had some ability in this connection. In the light of the facts secured in the diagnosis the conclusion was reached that his difficulties in reading related primarily to recognition and were due to lack of interest in reading, to inattention, and to lack of application.

*Remedial instruction.*—In order to secure effective progress remedial instruction was organized, which included the following: (a) devices to secure his interest, attention, and co-operation, (b) a large amount of oral reading of very simple passages with attention directed primarily to the content, and (c) daily exercises in word analysis based on the words which caused difficulty.

The remedial period was usually divided into three parts. During the first four or five minutes an effort was made to secure his interest and co-operation, and to direct his attention to the content of the selection to be read. In order to secure his interest he was permitted to select the story which was to be read, or his curiosity was aroused by telling him part of a story selected by the teacher or by asking interesting questions about the pictures which accompanied the story. His attention was further directed to the content through discussions about stories which he had read or some topic that would aid in the interpretation of the story.

The second part of the remedial period, which lasted for fifteen or twenty minutes, was spent in reading. Since C. S. and J. O. were taught together the method employed in conducting the reading exercises had to be changed somewhat from the usual procedure in individual instruction. Selections were frequently read in which each boy would take the part of a particular character. This device proved very effective because of their interest in the dramatic situation. A second device consisted in having one boy and the teacher close their books while the other boy read, thus creating an audience situation. A third device was the stimulation of a spirit of rivalry between the two boys. This device proved particularly effective in C. S.'s case inasmuch as he needed some sort of incentive.

During the reading exercises notes were made of the errors which occurred and the special difficulties which were encountered. These were made the basis of drill work during the third part of the remedial period. Sight words and words similar in form or having common phonetic elements were presented on cards or in sentences which were printed on cardboard or written on the blackboard. As the remedial

instruction progressed, it was found that he made much slower progress in word mastery than is ordinarily expected.

*Results.*—The results of tests given in March, 1922, showed the progress that had been made by that time. On the Gray Oral Reading Test in which C. S. was unable to score in January, he made a score of 38.75. In the Haggerty Reading Examination, Sigma I, he scored 5 in Test I and 3 in Test II. This did not show marked progress. However, there was no tendency to guess at the meaning and it was apparent that he had acquired the habit of reading for content. Furthermore, he had developed a span of recognition which enabled him to group words effectively in oral reading. Although very satisfactory progress had been made during the training period, it was evident that individual instruction should be continued for a time before he could be returned advantageously to his class for group instruction.

#### CASE D

A TWENTY-YEAR OLD YOUTH WHO WAS UNABLE TO READ FIRST-GRADE MATERIAL EFFECTIVELY, ALTHOUGH HE HAD COMPLETED THE WORK OF THE EIGHTH GRADE OF A RURAL SCHOOL. HIS DIFFICULTIES IN ASSOCIATING SYMBOLS WITH THEIR MEANINGS AND PRONUNCIATIONS WERE SIMILAR TO THOSE OF A CASE OF DYSLLEXIA

*Introductory statement.*—In November, 1921, when the study of the case began, H. W. was twenty years of age. Although he had graduated from the eighth grade of a district school and had had two additional years in a parochial school, he was unable to read first-grade material fluently and accurately. On the other hand, after a selection had been read to him he could often reproduce it in great detail. Although seriously handicapped by his inability to read, he had been able to complete the required work of each grade by having his lessons read to him, by listening carefully during class discussions, and by taking oral examinations.

His home conditions were satisfactory and he had been helped and encouraged in every way possible. He had made an honest effort to master the mechanics of reading but had not succeeded. The small amount of progress which he had made was acquired after he was fifteen years old through his mother's instruction. The physical examination which was given revealed no defects which were likely to interfere with his progress in reading, except slight speech defects. He did not enunciate clearly and he had difficulty in expressing himself fluently.

*Preliminary diagnosis.*—A preliminary study of the case was made through the use of standardized tests. The names of the tests, H. W.'s

scores, and the standard scores for several grades are included in Table III.

When the intelligence test was given he was aided on those exercises which involved reading. The results of the test indicated that he was slightly below the standard in general intelligence. He scored lower than an average first-grade pupil in oral-reading accomplishment and was between the standards for the second and third grades in ability to interpret what he read, except in the Monroe test in which he did not score when he read the exercises himself. His rate of silent reading was very much below the standard for second-grade pupils and indicated that he encountered serious difficulty in the mechanics of reading.

TABLE III

Tests	H. W.'s Scores	Standard Scores
The Stanford Revision of the Binet-Simon Tests	90	100
The Gray Oral Reading Test.....	25 Grade I 20 Grade II 19 Grade III	31 43 46
The Burgess Silent Reading Test.....	32 Grade III	50
The Courtis Silent Reading Test:		
Rate.....	45	84 Grade II 113 Grade III
Comprehension.....	75	59 Grade II 78 Grade III
The Haggerty Reading Examination, Sigma I..	11	12 Grade II 16 Grade III
The Monroe Silent Reading Test:		
Comprehension		
When he read the exercises.....	0	6.8 Grade III
When the exercises were read to him..	5	

An examination of his record sheet in oral reading showed that he read very slowly, haltingly, and inaccurately. He encountered difficulties even in the easiest passages, hesitating over simple words, repeating frequently, and substituting, inserting, and omitting words. The number of his errors increased as the passages became more difficult. Furthermore, total mispronunciations were frequent and he gave every evidence of being a word-reader.

The silent-reading tests showed that he encountered serious difficulties in the interpretation of what he read. When the passages and the directions of the Monroe Silent Reading Test were read to him he scored noticeably higher than when he read them himself. This indicated that

his major difficulties were in recognition rather than interpretation. Further evidence in support of this conclusion was secured in the intelligence tests in which he was unable to solve many of the problems in arithmetic or to respond accurately to the directions in the exercises when he read them himself. On the other hand, he responded quickly and accurately when the exercises were read to him.

*Detailed diagnosis.*—Three tests were used in studying his difficulties in the mechanics of reading. In the Jones Vocabulary Tests he made a score of 74.5 on the sight list and 75.4 on the phonetic list. Some of the words which he pronounced differed from the printed words only in one letter, as *big* for *dig*. In other cases there was only one or two letters in common, as *hurry* for *hear*. Informal tests showed that he had poor visual memory. For example, after receiving help repeatedly on a simple word in a selection, he frequently mispronounced it in the sentences and paragraphs which followed. He explained his inability to recognize words by saying that something queer seemed to happen in his head—"that his mind went blank and a word did not mean anything." In other words, there was no association between the symbol and its meaning or pronunciation. When a word was pronounced for him, he would repeat it many times under his breath and he frequently closed his eyes as if trying to fix the image of it in his mind. Proper names and such words as *why*, *what*, and *then* caused special difficulty. Words, such as *dog*, which called up vivid associations or concrete ideas were remembered most readily.

In Word Element Test A, he made errors but was able to pronounce most of the words when they were presented in simple sentences. He mispronounced many words at sight but corrected them later without help. He was able to give several words containing a common phonetic element, but it was significant that he often gave others which did not belong to the same group. Informal tests showed that he confused single consonant sounds as *b* and *d*, *m* and *n*, and that he did not recognize others when he saw them in such combinations as *dr*. He did not distinguish between the vowel sounds in many words, such as *will* and *well*, *sit* and *set*, *pat* and *pet*. Because he confused these sounds, he used the words interchangeably in conversation and in reading. When word difficulties were encountered, he usually tried to determine pronunciations by spelling the words. When this device failed, he was helpless. He was surprised when shown that the word *hand* contained the word *and* which he knew and the letter *h*. These facts indicated clearly that he had not mastered word analysis or phonetics.

The short-exposure tests were given in order to study the accuracy with which he organized isolated letters, words, phrases, and short sentences. The results of the tests are recorded in Table IV.

These tests showed clearly that he had difficulty in the recognition of many short words and that he had a narrow span of recognition. Fourteen errors were made in the recognition of twenty-six isolated letters. He recognized most of the two-letter words at sight but encountered difficulty in the recognition of longer words. Several exposures were necessary for most of the short phrases and many exposures were necessary for the longer phrases. Additional evidence of a narrow span of recognition was secured in informal tests in which the teacher read to him. In such cases, he was unable to recognize words in thought groups rapidly enough to follow effectively even if the reader read much slower than the normal rate.

TABLE IV

Recognition Series	Number of Items in Each Series	Number of Errors in Each Series
Isolated letters.....	26	14
Two-letter words.....	18	2
Three-letter words.....	10	4
Four-letter words.....	10	5
Two-word phrases.....	10	21
Three-word sentences.....	10	23

A photograph record of his eye-movements in oral reading was secured. A reproduction of a portion of the oral-reading record appears in Plate II.

Three significant facts are revealed by the record. (1) He made an unusual number of fixations per line, which indicates a narrow span of recognition. (2) He encountered periods of almost complete confusion as shown in the latter part of the third line of the record, which indicates inadequate mastery of word recognition. (3) The number of regressive movements was large, which indicates that he had not mastered the mechanics of reading sufficiently to have acquired rhythmical habits of eye-movements. The extent of his difficulties are shown in a striking way in Table V.

This table shows that he made more fixations per line and a larger number of regressive movements per line than ordinarily occur in the case of pupils at the end of the first half of the first grade. His greatest

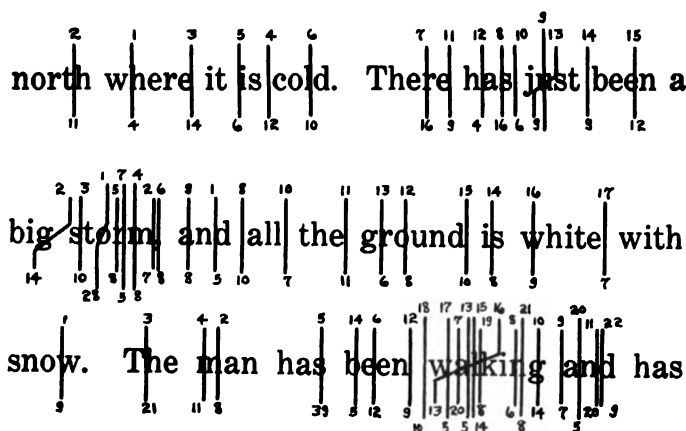
deficiency was in the number of fixations per line. In respect to all phases of oral reading represented in the photographic record, H. W. was much below an average first-grade pupil.

TABLE V

Items	I B Standards	I A Standards	Second-Grade Standards	H. W.'s Record
Average number of fixations per line.....	16	14.5	12	21.4
Average duration of fixations.....	19.2	12.8	9.8	12.4
Average number of regressive movements per line.....	4.4	3.1	2.5	5

Informal tests of comprehension revealed some interesting and significant facts concerning his habits of interpretation. (1) He had less difficulty with selections in which the story element was strong than with selections in which interpretation depended on getting a

PLATE II



particular point accurately. (2) Because of difficulties in recognition, he had formed the habit of reading passages several times to pronounce the words before considering the meaning. (3) He had a limited meaning vocabulary which resulted in his failure to understand the meanings of many words in relatively simple passages. (4) After hearing a story read once, he could usually read a part, or all, of it fairly well because of his unusual power of retention. (5) He had little or no difficulty in answer-



ing memory questions but had numerous difficulties in comprehending material of a problematic nature and in thinking independently about it. (6) When he was unable to understand a passage which he had read himself, he was usually able to discuss its meaning intelligently after it was read to him.

*Summary of diagnosis.*—The diagnosis showed (a) that H. W. encountered unusual difficulties in the recognition of words, (b) that he had a limited sight vocabulary, (c) that he had little or no knowledge of the elements of words, (d) that he was frequently unable to remember a word after he had been told repeatedly what it was, (e) that his eye-movements were very irregular and immature, (f) that his span of recognition was very narrow, (g) that he read very slowly owing to difficulties in recognition, and (h) that he was weak in the interpretation of what he read, due primarily to difficulties in recognition and to the fact that he had not formed the habit of thinking about the content while reading. In fact, all of the information which was secured showed that he encountered as much difficulty in associating symbols with their meaning and pronunciation as real cases of dyslexia encounter. The fundamental differences between H. W. and most cases of dyslexia were that he was extremely eager to learn to read, he was able to follow directions intelligently, and he was able to hold himself to assigned exercises for several hours each day.

*Remedial instruction.*—The remedial instruction which was planned aimed (a) to develop ability to recognize words independently and to associate meanings with them quickly and accurately, (b) to establish effective eye-movements and to increase his span of recognition, and (c) to stimulate permanent interests in reading. Because of his maturity he was given forty-five minutes of individual instruction each day.

*Method of procedure during the first lessons.*—On account of his serious difficulties in recognizing words, it was necessary at first to use primer material and charts. The use of simple, familiar selections, the content of which could be mastered easily, aided in developing habits of fluent recognition. Sentences, or short units, were prefaced by suggestions concerning the content, such as "The next line tells where the girl lived" or "This paragraph tells what the hen did with the seed." First, he read silently and then aloud. As a result, he anticipated words from a study of the content and the associations between meanings and symbols were accordingly more effective. Words which he did not know were pronounced for him. A record was kept of these words and used at the end of the period in exercises which will be described later.

Occasionally, selections were printed on charts. After reading a selection on a chart as a unit, a duplicate chart was cut into strips containing single sentences. He was asked to read the first sentence on the chart and then to find the strip containing the same sentence. The second chart was built up sentence by sentence by matching with the first. He was then directed to find the line which says, "The dog is large." When he was able to recognize the sentences in any order, they were cut into phrases and matched with those of the original chart. They were then cut into shorter phrases, and occasionally into words. When he was unable to recognize a word or phrase he referred to the chart where he found it in its original setting. This method also enabled him to recognize words in thought groups. After studying a selection in this way he was asked to re-read it orally in order to get the story as a whole and to develop habits of fluent, accurate reading. Through exercises of this type, his reading vocabulary was soon sufficiently large to enable him to prepare short stories at home which were read the following day.

*The daily recitation period.*—As soon as he had made some progress in reading independently, forty-five minutes were spent each day in a variety of helpful exercises. Assigned selections which were prepared at home were discussed and re-read. Questions and suggestions were given to arouse an interest in the reading for the day and to direct his attention to the content. If a selection was not familiar, the story was told briefly and some of the more difficult words were used in sentences similar to those which appeared in the story. This enabled him to anticipate words and prevented the formation of incorrect associations. He was encouraged to discuss these selections; he was asked questions which tested his comprehension of what he had read, and he was asked to read passages aloud. Furthermore, suggestions were given to aid in fluent reading. The words which gave him trouble were noted and emphasized during the drill period. Ten or more minutes of each period were devoted to drill exercises calculated to increase his ability to recognize words and to increase his span of recognition. As soon as he was able to recognize words with considerable rapidity, sight-reading exercises were assigned.

*Increasing ability in recognition.*—Exercises to increase his ability to recognize words independently were based on the words which he failed to recognize during the reading period. At first, these words were used in sentences, similar to those which appeared in the reading selections. After a considerable amount of blackboard drill had been

carried on, parts of each sentence were erased, leaving on the board the phrases which caused difficulty. Finally, single words were left on the board in order to test his ability to recognize them quickly.

He was next taught to recognize new words by comparing them with familiar words. When he failed to recognize *threw*, the words *flew* and *grew*, which he knew, were written on the board. When *threw* was presented again he recognized the common element and was able to pronounce it. Other words containing *ew* were then written on the board. He was also asked to name words containing *thr*. Inasmuch as he had unusual difficulty in learning to recognize words, a great deal of assistance and much repetition were necessary. For this reason, phrases and short sentences containing the words which he encountered frequently and missed repeatedly were printed on cards and used in quick-perception drills. When longer and more difficult words were encountered, he frequently omitted final syllables or became confused in his attempt to pronounce polysyllabic words. In such cases, he was shown a series of words, such as *come*, *become*, *becoming*, *becomingly*. Furthermore, commonly used prefixes and suffixes were noted and words containing them were listed. Before many polysyllabic words were recognized, training in syllabication was necessary.

*Establishing regular eye-movements and increasing his span of recognition.*—Inasmuch as most of the irregularities of his eye-movements were due to difficulties in recognition, his eye-movements became much more regular as his ability to recognize words increased. Several specific exercises were necessary, however, to secure rapid improvement. He was asked to follow the page while the teacher read to him. Because of his tendency to see only one word at a time, he was unable at first to recognize words as rapidly as the teacher read. The passages were then read more slowly and the phrasing emphasized. Sometimes a pencil was passed under groups of words which formed thought units, as The boy saw the dog and ran away. After following the reading of a page in this way, he was usually able to proceed more rapidly and to group words more effectively. This lessened the number of fixations per line as well as his tendency to repeat. On the other hand, it increased the regularity of his eye-movements. The habit of recognizing a group of words at each fixation was further emphasized by another exercise. Two-word phrases, such as *said he*, *come again*, and *as though*, were printed on cards and used in flash-card exercises. As soon as he was able to recognize two-word phrases, longer phrases and sentences were introduced.

*Training in phonetics.*—After eight weeks of instruction had been given, some training in phonetics was introduced because he was unable to distinguish differences in many words which were more or less similar in form. This was due to his inability to distinguish differences in the sounds of such letters as *b*, *d*, and *p*, *m* and *n*, and many vowels. The word which gave him trouble on a given occasion was written on the board. Other words containing a common phonetic element were supplied by him or the teacher. This afforded frequent opportunity for the association of sounds and their written symbols. The list of words was then recorded in a notebook and he was asked to add to the list all words containing the same element which he encountered in his reading during the next day. These were looked over and corrected. The following were also taught in the same way: single consonants, compound consonants, short and long vowels, and vowel digraphs. The notebook was used as a dictionary of familiar words and referred to frequently. New words were added from time to time. After a short vowel had been taught in many combinations, several words containing it, but with different initial consonants and endings, were presented in miscellaneous order, such as *fan*, *fat*, *sat*, *sad*, *glad*. This enabled him to recognize the sound of short *a* in any combination. A chart containing these words was used in frequent reviews. When all of the short vowels had been taught a chart was introduced on which words containing them had been printed, such as *ran*, *fed*, *dot*, *tin*, *cut*. He soon discontinued his attempts to recognize words through spelling and applied his knowledge of phonetics in the recognition of new words. He also began to distinguish such words as *tell* and *till*, *dig* and *big*, and *din* and *dim*.

*Stimulating permanent interest in reading.*—Because of his maturity, the problem of selecting material which was of interest and at the same time simple enough for him to read was a difficult one. He appreciated the situation when told that it would be necessary to begin with primer material and expressed a willingness to read anything, if he could be taught to read. The best selections were chosen from a large number of primers and first readers. As soon as he was able to read second-grade material a greater variety of selections was available. Animal stories and stories of adventure were used extensively. Because he had been deprived of the pleasure of reading such stories in his childhood, he read them at this time with genuine interest. As soon as he was able to read independently, supplementary reading was assigned. A part of a story was read in order to arouse his interest. He would then take the story home to complete it. Later, many simple books were begun

during sight-reading exercises. When he had read enough of a story to become interested in it, he was given the book to complete by himself. He was encouraged to discuss what he read but was not held to specific assignments. Occasionally, when the thought of a passage was not quite clear, he would bring the book to the classroom to discuss the points which he did not understand. Since he needed to read a great deal at this stage of his progress, he was encouraged to visit the library and to select books for himself. Suitable books were also brought to the classroom, from which he made selections. Keen interest in reading was aroused by these methods and he did much voluntary reading.

TABLE VI

Tests	November Scores	March Scores	Standard Scores
The Gray Oral Reading Test.....	25 Grade I	142.5	31
	20 Grade II	51.25	43
	19 Grade III	46.25	46
The Burgess Silent Reading Test....	32 Grade III	50	50
The Courtis Silent Reading Test:			
Rate.....	45	97 Grade II	84
		Grade III	113
Comprehension.....	75	85.7 Grade II	59
		Grade III	78
		Grade IV	89
The Haggerty Reading Examination,			
Sigma I:			
Test I.....	11	19 Grade II	12
		Grade III	16
		Grade IV	20
Test II.....	0	18 Grade II	8
		Grade III	14
		Grade IV	18
The Monroe Silent Reading Test:			
Comprehension.....	0	6 Grade III	6.8

*Results.*—After sixteen weeks of training, he was given the tests again. The scores which he made in November, 1921, his March scores, and the standard scores for several grades are included in Table VI.

The results of the tests showed very satisfactory progress. He had reached the third-grade standards in all phases of reading except in rate of silent reading according to the Courtis test and in comprehension according to the Monroe test. He closely approximated the fourth-grade standards in comprehension according to the Courtis Silent Reading Test and the Haggerty Reading Examination, Sigma I. Although considerable progress had been made, it was accomplished only at the sacrifice of a tremendous amount of time and energy. The fact that

H. W. was more or less mature, was determined to learn to read, and was able to concentrate on assignments for several hours each day, made progress possible. When the reading was interrupted for one or two days, it was necessary to repeat much of the early training before he could proceed with more advanced work. Even under normal conditions, there were days when he encountered great difficulty in reading the simplest passages. It was evident at the end of the training period that special training should be given every day *for a long period of time* before he could read independently.

#### SUMMARY OF CAUSES

The causes of little or no progress in learning to read in the four cases which have been described may be summarized briefly as follows: (a) general immaturity; (b) partial deafness; (c) poor visual memory; (d) timidity; (e) malnutrition; (f) extreme nervousness; (g) inattention; (h) lack of application; (i) lack of interest in reading; and (j) dyslexia. Anyone who attempts a detailed diagnosis of a pupil who has made but little progress in reading should supplement the list of causes mentioned above with those which are described in chapter iii. Furthermore, he should search for additional causes until he has found a satisfactory explanation of a pupil's difficulty.

#### CONCLUSIONS CONCERNING REMEDIAL INSTRUCTION

The following suggestions concerning remedial instruction are based on the results of the investigations reported in this chapter. (1) Instruction must begin, as a rule, with the simplest rudiments of reading. (2) It should be given preferably in the form of individual instruction. (3) The teacher must secure the complete confidence and co-operation of the pupil. (4) Selections must be chosen which will stimulate the interest, excite the curiosity, and hold the attention of the pupil. Consequently, the selections used must vary with the age of the subject. In all cases, however, they must be very simple. (5) The methods employed must result in vivid, lasting impressions. (6) The opportunity to associate symbols with their meaning and pronunciation must be repeated until desirable habits are established. (7) The teacher must expect slower progress than in the case of pupils who do not encounter unusual difficulties in learning to read. Furthermore, new habits and associations must be introduced slowly. Sufficient time must be allowed for the mastery of even very simple habits. (8) The most satisfactory results will be secured only through the practice which comes from reading a large amount of material with a genuine motive.

## CHAPTER V

### PUPILS WHO ENCOUNTERED SERIOUS DIFFICULTIES IN INTERPRETATION

The four pupils whose cases are reported in this chapter had made considerable progress in all phases of reading, but encountered real difficulties in understanding what they read. Three of these pupils were from the fifth, sixth, and eighth grades. The fourth was an unclassified pupil who had attended school for only a short time, her instruction in reading having been given largely by a tutor. It is both interesting and significant that pupils who are reported as weak in interpretation are usually middle- or upper-grade pupils. The explanation doubtless lies in the fact that reading accomplishment in the lower grades is judged primarily in terms of the mastery of the mechanics of reading. Hence serious difficulties in interpretation are usually not noted until pupils begin to study content subjects independently. In order to reduce the possibility of poor habits of interpretation in the middle and upper grades, systematic study of the reading accomplishments of children should be made very early in the primary grades.

Pupils who are unable to interpret what they read can be located easily through the use of standardized and informal reading tests. Several tests should be used inasmuch as pupils who encounter serious difficulties in interpretation may score relatively high in a particular test. Furthermore, it is necessary to determine a pupil's characteristic difficulties in different types of reading exercises before a comprehensive program of remedial instruction can be organized. The detailed study of the four cases reported in this chapter revealed the following significant facts: (a) the pupils scored relatively low in most of the comprehension tests; (b) their difficulties in interpretation were far more serious than those in recognition; (c) they had inadequate meaning vocabularies; (d) their reading experiences were limited; and (e) they did little or no reading on their own initiative.

Although these four cases possessed several common characteristics, they differed widely in respect to their difficulties in interpretation. E. G., who had mastered the mechanics of reading, had not established the habit of directing her attention to the content of what she read or of thinking independently about it. M. T. was inaccurate and erratic

in interpretation, supplying ideas which were not found in the passages. J. P. interpreted simple interesting selections effectively but failed to interpret passages of a factual or problematic type. M. G. was an unusual case who failed in interpretation because of limited mental capacity and general immaturity. Inasmuch as these pupils encountered common weaknesses in interpretation, as well as individual difficulties, the remedial instruction which was planned was quite similar in many respects and distinctly different in others.

In the reports which follow, most of the methods and devices which are described relate to improvement in interpretation. In some cases, however, pupils encountered difficulties other than those in interpretation. In order to present all the important facts concerning each case, the various types of remedial instruction which were used are described. It should be understood, however, that the major problem in each case was that of establishing appropriate habits of interpretation.

#### CASE E

A FIFTH-GRADE GIRL WHO HAD NOT ESTABLISHED THE HABIT OF DIRECTING HER ATTENTION TO THE CONTENT OF WHAT SHE READ OR OF THINKING INDEPENDENTLY ABOUT IT

*Introductory statement.*—In January, 1922, E. G. was thirteen years of age. She was somewhat overgrown, muscular, awkward, nervous, and timid. In 1920, when she entered the school in which this investigation was made, it was almost impossible for her to adapt herself to the conventions of school life. She evidenced, according to the statement of her teacher, "the characteristics of a caged wild animal." She lived in a very poor part of the city and came from an environment which was anything but stimulating. Very little accurate information could be secured in regard to her early school history. During the two years which she had attended this school, her work in the content subjects had been very poor although her work in arithmetic had been satisfactory.

*Preliminary diagnosis.*—A preliminary study was made of the case through the use of five standardized tests. The names of the tests, the scores which were made, and the standard fifth-grade scores are included in Table VII.

The scores indicate that E. G. was a satisfactory oral reader and a fluent silent reader, that she was slightly below the average in general mentality and that she was considerably retarded in the interpretation of what she read. An analysis of the records secured during the oral-



reading test showed that she read simple passages fluently and accurately. In difficult passages, on the other hand, she was a typical word-reader making numerous careless errors on simple words and gross errors on polysyllabic words. In the cases of many pupils, difficulties in recognition account for ineffective interpretations. However, inasmuch as the silent-reading tests which were given to E. G. contained very simple passages, the tentative conclusion was drawn that her failure in interpretation was not due primarily to difficulties in recognition. In order

TABLE VII

Tests	E. G.'s Scores	Standard Fifth-Grade Scores
The Illinois Intelligence Test.....	96	100
The Gray Oral Reading Test.....	49	48
The Burgess Silent Reading Test.....	44	50
The Curtis Silent Reading Test, No. 2:		
Rate.....	193	168
Comprehension.....	50	93
The Thorndike-McCall Silent Reading Test.....	36.5	48

to determine the validity of this conclusion and to secure additional information concerning her reading habits a more detailed diagnosis of the case was made.

*Detailed diagnosis.*—In Word Recognition Test A, she made a perfect score which indicated a thorough mastery of first-grade words. In Word Element Test A she pronounced the words readily but encountered serious difficulty in giving other words containing given phonetic elements. This indicated that she recognized phonetic elements more readily by sight than by sound. The short-exposure tests revealed a remarkably wide span of recognition. She recognized, in thirty-five exposures, thirty expressions varying in length from *for fun* to *The bright sun shines*. The results of these tests indicated clearly that failure in interpretation could not be attributed to difficulties in recognition. Furthermore, the results of the short-exposure tests gave a partial explanation for her high score in rate of silent reading.

Photographic records of her eye-movements were made for both oral and silent reading. Owing to defects in the silent-reading record it was impossible to tabulate the facts relating to silent reading. In Table VIII E. G.'s records in oral reading are compared with the fifth-grade standards.

The entries in this table show clearly that E. G.'s habits were similar to those of the average pupil of her grade with respect to the items compared. The silent-reading record which was somewhat indistinct showed that she had unusually satisfactory eye-movements in silent reading.

In order to determine more accurately the nature of her difficulties in interpretation several informal tests were arranged. Short fables containing only one main idea, simple narratives, the incidents of which could be easily related in sequence, and fairy stories which required wide use of the imagination were assigned in turn. She missed the main points of the fables and was unable to reproduce them. She could give only a few disconnected facts from the narratives and these were usually unimportant. She enjoyed the fairy stories most, but got only general

TABLE VIII

Items	E. G.'s Scores	Fifth-Grade Standards
Average number of fixations per line.....	9	8.7
Average duration of fixations.....	7.6	7.2
Average number of regressive movements per line.....	2	1.4

impressions from them and was unable to tell why she liked them. When asked, "Where did the fairy live?" she was uncertain. When asked, "What kind of fairy was she?" it was found that she had formed no opinion, although an accurate interpretation of the story depended very largely on the answer to this question. When unable to answer a question she was frequently shown the particular paragraph containing the required information. Even with this help she failed frequently and it was necessary to read the passage to her. After a series of informal reading exercises of this type it became very clear that she had never formed the habit of directing her attention to the content of what she read or of thinking about it independently.

*Summary of diagnosis.*—The diagnosis showed clearly that E. G. read aloud satisfactorily, that she recognized simple words rapidly and accurately, that she read silently at a relatively high rate, and that she had a wide span of recognition. Her only significant difficulty in the mechanics of reading was inability to recognize polysyllabic words accurately. On the other hand, the diagnosis showed that she was decidedly weak in all phases of interpretation, that she

failed to direct her attention to the content of what she read, and that she did little or no independent thinking while reading.

*Remedial instruction.*—The foregoing diagnosis made it clear that the problems of remedial instruction for E. G. related almost entirely to the cultivation of effective habits of interpretation, including the habit of looking for meanings in all reading exercises and the habit of thinking independently while reading. Although she encountered difficulties in the recognition of polysyllabic words, it was concluded that training in the recognition of such words should be postponed until habits of effective interpretation of simple passages had been developed. In order to insure rapid progress in the development of effective reading habits, twenty-five minutes of individual instruction were given each day.

*Cultivating the habit of looking for meaning while reading.*—Short and very simple selections were used at first. She was asked to read these aloud in order to enable the teacher to discover some of her difficulties. Frequently a part of an assigned story was told to her before the reading began in order to give her some idea of its content and to stimulate her interest. She was then asked to read one short unit after another. Each was prefaced by a suggestion or question to direct her attention to its content, such as "The next paragraph tells who helped the girl" or "How do you think the fox escaped?" "Read the next paragraph to see if you were right or if the story tells it differently." Meanings of words were supplied when she was confused and other questions were asked from time to time to test her ability to interpret passages. When she failed to get the meaning she was asked to re-read one or more paragraphs or they were read to her and the important points were emphasized.

It was several weeks before she could read an entire selection, even a very short one, and reproduce it effectively or answer questions concerning its content intelligently. The first assignments for independent reading were fables or short selections containing only one or two significant points. In this connection she was given specific suggestions or questions to direct her attention to the content, such as "Why were the animals in this story timid?" or "What taught them not to be afraid?" Although the entire story in some cases was less than a page in length, she frequently had to re-read before she was able to answer the questions satisfactorily.

Inasmuch as she became confused when different types of stories were read, she was allowed to study only one type until she was able to

interpret that kind of story successfully. She was given fables for a few days until she formed the habit of looking for the main point. In order to avoid monotony, the assignments were varied. Sometimes she was asked to read silently and to reproduce the story or to name the important points. At other times she was given such exercises as the following: "Write the name of the animal that lost its tail" or "If you think the deer was wise write the word *yes*; if not, write the word *no*." At first, when she was asked to reproduce a fable, she confused the order in which the incidents occurred, omitted important points or forgot whether it was a fox or a bear which was mentioned in the fable. It was necessary in such cases to aid her by asking questions which directed her attention to the important ideas and which recalled the facts in correct sequence. When told in advance that she would be asked to reproduce a selection, she read more carefully.

Simple narratives were next assigned. These were also read in short units at first. Later she was given lists of questions to use as a guide while reading. After reading the selection, she was asked to look over the questions again and to re-read the parts of the story which she did not remember. After a number of selections were studied in this way, she began to assume some responsibility for accurate interpretations and she read more carefully. Her own interest in her progress was evidenced by such questions as, "Did I tell that story well?" or by such remarks as, "I answered the questions without help today."

She was also assigned animal stories, fairy tales, stories of adventure, and imaginative stories of all kinds. As soon as she made satisfactory progress in interpreting simple passages, more difficult selections were assigned. After she had read orally, passages were discussed, meanings were explained, and thought-provoking questions were asked. When she read silently she was given specific directions or a list of questions to aid her in effective interpretation. The questions which were used in the study of one story follow.

1. What did the Indian use for money?
2. Who was his friend?
3. What did the elk say about his wampum?
4. What did the elk promise him?
5. Where was the Indian to find the wampum, and what was he to do with it?
6. Describe his trip.
7. What happened when he struck the rock?
8. What did he forget?

9. What reminded him of his promise?
10. What did he then do with the wampum?
11. What happened to him?
12. How long was he away from home? What changes did he find when he returned?
13. What did he try to teach his people?
14. Do you think he deserved his punishment? Why?

*Encouraging independent thinking.*—After reading a selection and discussing its content, questions were asked to direct her attention to more subtle meanings and to cause her to think independently about what she read. For example, she was asked such questions as “Why did one man in this story fail and the other succeed?” “How might the king’s subjects be benefited later by this experience of the king?” “What reason, other than the one mentioned in the story, might the girl’s father have had in mind when he asked her to keep her promise?” “In which of the two places described would you rather live?” “Why?” Through the use of a variety of selections, by explaining references, and by giving additional information, an effort was made to broaden her background of experience, to enlarge her meaning vocabulary, to stimulate a permanent interest in reading and to develop habits of effective thinking while reading.

*Results.*—Instruction was given for nine weeks in January, February, and March, 1922. Inasmuch as she was absent two weeks on account of

TABLE IX

Tests	January Scores	March Scores	Standard Fifth-Grade Scores
The Gray Oral Reading Test.....	49	61.25	48
The Burgess Silent Reading Test.....	44	50	50
The Courtis Silent Reading Test:			
Rate.....	193	210.5	168
Comprehension.....	50	60	93
The Thorndike-McCall Silent Reading Test	36.5	40	48

illness she had only seven weeks of training. The tests were given again at the end of the training period. Her preliminary scores, the scores which she made after training, and the standard scores for her grade are included in Table IX.

The scores indicate that at the end of the training period she was far above the average for her grade in oral reading and in rate of silent reading, and that she was up to standard in the Burgess Silent Reading

Test. Her scores in the other tests indicate that she had made considerable progress in interpretation but that she was not yet up to the standard for her grade. Additional individual instruction was, therefore, recommended.

## CASE F

A SIXTH-GRADE GIRL WHO WAS INACCURATE AND ERRATIC IN INTERPRETATION BECAUSE OF A LIMITED MEANING VOCABULARY, AN OVER-CULTIVATED IMAGINATION, AND POOR HABITS OF THINKING WHILE READING

*Introductory statement.*—In January, 1922, M. T. was twelve years old. She was pale, thin, and nervous, wore glasses, and was well-dressed, neat, and clean. She was also overconscientious and emotional. It became evident early in the diagnosis that she had a narrow background of experience and a limited vocabulary. She was transferred from the seventh grade to the sixth early in the fall. Her teacher reported that she was doing unsatisfactory work even in the sixth grade although she was interested in her work and put forth every effort to succeed. The content subjects caused her the most difficulty.

*Preliminary diagnosis.*—A preliminary study was made of the case through the use of standardized tests. The scores which she made and the standard sixth-grade scores are also included in Table X.

TABLE X

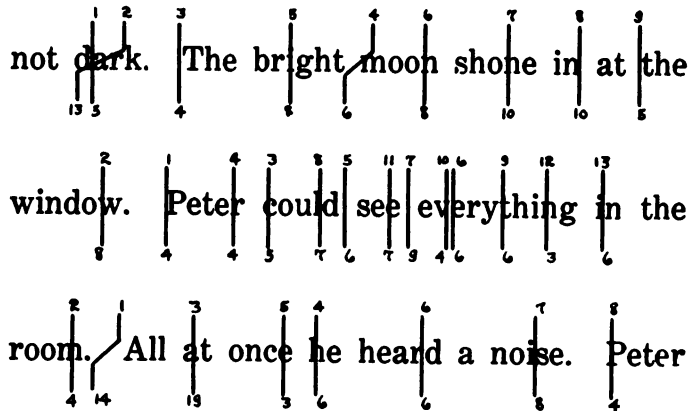
Tests	M. T.'s Scores	Standard Sixth-Grade Scores
The Illinois Intelligence Test.....	96	100
The Gray Oral Reading Test.....	40	49
The Burgess Silent Reading Test.....	38	50
The Courtis Silent Reading Test, No. 2:		
Rate.....	176	191
Comprehension.....	70	95
The Thorndike-McCall Silent Reading Test.....	54	53.7

The scores show that M. T. was slightly below the average in general mentality, that she was a slow, fairly accurate oral reader, and that she was somewhat retarded in rate of silent reading and in the interpretation of what she read. In this connection it should be noted that the comprehension scores varied widely. In the Thorndike-McCall test in which she read for specific purposes under the guidance of definite questions, she scored slightly above the average for her grade. In the Burgess and the Courtis tests, which are somewhat simpler in many respects, she made less satisfactory scores. These differences were striking and suggested the need of further diagnosis.

An analysis of the records secured during the oral-reading test showed that she made few errors on the simple passages of the test. These were chiefly repetitions of short words or parts of words. She encountered no real difficulties in word recognition except in the case of polysyllabic words. Hence it did not seem probable that her difficulties in interpretation were due primarily to inability to recognize words. In order to secure additional information concerning her habits of recognition and interpretation, a more detailed diagnosis was made.

*Detailed diagnosis.*—Three tests were given to determine specific difficulties in the mechanics of reading. In Word Recognition Test A she made only two errors, which indicated a very satisfactory mastery

### PLATE III



of simple words. In Word Element Test A she pronounced the words readily and was able to give other words containing the same phonetic elements. In the short-exposure tests it was necessary to present many of the short phrases, such as *for fun*, a second or third time before she recognized them. Even a greater number of exposures was necessary in the case of long phrases. These three tests showed that she had a good sight vocabulary of simple words and that she was able to pronounce phonetic words easily. On the other hand, they showed that she had a very narrow span of recognition which doubtless accounted, in part, for her slow rate in both silent and oral reading.

Photographic records of her eye-movements were next secured in order to study her habits of recognition in greater detail. A portion of her silent-reading record is reproduced in Plate III.

Her record revealed a very interesting characteristic of her reading, namely, that she proceeded with few irregularities from left to right along some lines, and that there were many irregularities in other lines. Additional facts are shown in Table XI.

She was below the standard for her grade in both oral and silent reading with respect to the number and duration of fixations and the number of regressive movements. She made a smaller number of fixations per line in silent reading than in oral reading but the number of regressive movements per line and the duration of fixations in silent reading were the same or greater than in oral reading. These facts

TABLE XI

ITEMS	ORAL READING		SILENT READING	
	M. T.'s Record	Sixth-Grade Standards	M. T.'s Record	Sixth-Grade Standards
Average number of fixations per line	12	8.9	10	7.3
Average duration of fixations.....	8.4	7.3	8.9	5.9
Average number of regressive movements per line.....	3	1.4	3	1.6

indicate that there was only a small amount of difference in the character of her eye-movements in oral and silent reading. The study showed clearly that remedial instruction was necessary to reduce the number and duration of fixations and to increase the regularity of her eye-movements.

In order to secure detailed information concerning the nature of her difficulties in interpretation, several informal tests were given. Fables, narratives, folk stories, and fairy tales were assigned in turn. She responded readily but her reproductions and answers to questions were frequently irrelevant or not true to fact. She used some of the less familiar words glibly but inaccurately. She attached wrong meanings to words which often caused her to misinterpret the content. Stories containing descriptions of many details were warped and colored by her imagination. Although she could talk fluently about the stories she did little independent thinking about their content. When asked to express her own opinion or to tell why a certain thing happened, it was evident from the nature of her answers that she had given little or no thought to such problems. On the other hand, when she was guided in her reading by lists of questions, she was able to interpret the passages much more accurately. It was in connection with cursory reading which was not



controlled or guided by questions or specific purposes that she read least effectively.

*Summary of diagnosis.*—The diagnosis showed that M. T. read orally with a fair degree of accuracy but that she read very slowly on account of a narrow span of recognition, long fixations, and a large number of regressive movements per line. The diagnosis also showed that she was below the average for her grade in ability to interpret what she read and to think independently about the content. These difficulties in interpretation were due to a limited meaning vocabulary, to an overcultivated imagination, and to ineffective habits of thinking while reading.

*Remedial instruction.*—She was given individual instruction each day. The twenty-five-minute period was usually divided as follows: (a) the first few minutes were devoted to reports on assigned work or to discussions based on outside reading; (b) the greater part of the period was spent in reading various types of selections, emphasizing accurate interpretation and independent thinking; and (c) the remainder of the period was given to drill exercises to increase her span of recognition, to establish regular eye-movements, and to develop independence in the recognition of polysyllabic words.

*Curbing her imagination by holding her to facts.*—She was assigned short simple selections at first. It was found that when she was asked to reproduce what she read she added many details and changed parts of stories to suit her fancy. In order to overcome this tendency she was assigned one or two definite things to look for while reading and her responses were confined as far as possible to answers to specific questions. Fables were frequently assigned and she was asked to express the most important points in one or two brief sentences. She was next assigned short narratives and was given a list of questions to use as a guide while reading. In answering these questions, emphasis was placed on reporting incidents or important points in correct sequence. Later she was asked to reproduce short selections. If it was necessary, occasional questions were asked to direct her attention to the main points of the story and to hold her to the facts as they were given in the selection. Animal stories and selections based on historical events were assigned in turn. As soon as she was able to interpret simple stories and factual material satisfactorily, more difficult selections were assigned.

*Encouraging independent thinking.*—After considerable progress had been made in accurate interpretation, she was asked thought-provoking questions based on the content of selections and she was encouraged to

express her own opinion and to think independently about what she read. Such questions as the following were asked: "Why did the plan of the villagers fail?" "Who might have saved the situation?" "What might he have gained by helping?" "Was he right or wrong in refusing?" "Why?" "If he had helped, how might the story have ended?" "What is your opinion of the judge?" Her ability to interpret a passage and to follow directions was tested by such exercises as "If you agree with what the girl said draw a line under the word 'agree'; if you do not, draw a ring around it."

*Enlarging her meaning vocabulary.*—Her failure to interpret a selection or to answer questions about it was frequently due to the fact that she did not know the meaning of words. For example, she confused *cavalry* with *calvary* and said it had something to do with a cemetery; she confused *turquois* with *tortoise* in a story describing the walls of a palace set with precious stones, and she failed to interpret a story about a farmer who had many barns because she confused the word *granaries* with *canaries*, and concluded that he had many birds. It was evident that many commonly used words were unfamiliar to her and it was necessary to explain their meanings before she understood selections which contained them. She was frequently asked to read selections aloud and when it was clear that she did not understand the meaning of a word, a definition was supplied. She was encouraged to use the dictionary and was held responsible for the meanings of words in selections which were assigned for home reading. A wide variety of stories were read in class and were suggested for outside reading in order to extend her experience and to enlarge her vocabulary.

*Increasing her span of recognition.*—At first she recognized one word at a time. Accordingly, thought groups were emphasized, and she was asked occasionally to re-read a paragraph after its meaning was clear in order to group the words more effectively. Phrases with which she had difficulty were sometimes written on the board, or certain phrases in given sentences were underscored in order that she might determine which words belonged together. Quick-perception exercises were also used to increase her speed and accuracy of recognition. As soon as she had gained some independence in recognition and her span of recognition began to increase, her tendency to repeat became less prominent.

*Training in the pronunciation of words.*—Help was given on the phonetic elements which were not known and which interfered with the accurate recognition and pronunciation of simple words. For example, in one story, she called *wren*, *wern*, and therefore failed to understand

what she read. Drill exercises were then arranged based on words containing *ur* or any other word element which caused difficulty. Polysyllabic words which she was unable to pronounce were divided into syllables to aid her in pronouncing them. Lists of words, containing the prefixes or suffixes which she failed to recognize readily, were also studied and used in drill exercises until they were recognized readily.

*Results.*—The training was continued for a period of nine weeks. Her preliminary scores, the final scores, and the standard scores for her grade are included in Table XII.

TABLE XII

Tests	January Scores	March Scores	Standard Sixth-Grade Scores
The Gray Oral Reading Test.....	40	46.25	49
The Burgess Silent Reading Test.....	38	44	50
The Courtis Silent Reading Test:			
Rate.....	176	162	191
Comprehension.....	70	91.4	95
The Thorndike-McCall Silent Reading Test.....	54	55	53.7

The scores indicate that she had made some progress in oral reading and considerable progress in comprehension, but was not yet up to the standards for her grade in most phases of reading. Her March score in rate of silent reading was below her January score. This reduction in her rate of reading was probably due to the unusual amount of care which she exercised during the test in order to answer the questions correctly. Her rate may also have been retarded for a time while acquiring the habit of directing her attention to the content.

## CASE C

AN EIGHTH-GRADE BOY WHO FAILED TO INTERPRET EFFECTIVELY PASSAGES WHICH WERE PROBLEMATIC IN CHARACTER OR WHICH REQUIRED INDEPENDENT THINKING, BECAUSE OF A NARROW BACKGROUND OF EXPERIENCE, A LIMITED MEANING VOCABULARY, FAILURE TO DIRECT ATTENTION TO THE CONTENT, AND INCAPACITY TO LEARN READILY

*Introductory statement.*—J. P. was fourteen years old when the study of his case began in October, 1921. He was normal physically and attended school regularly. According to the report of his teachers, he had a limited background of experience; he was slow in his mental reactions, and he ranked low in most of his school subjects.

*Preliminary diagnosis.*—A study of his case was made through the use of five standardized tests. The names of the tests, J. P.'s scores, and the standard eighth-grade scores are included in Table XIII.

The scores indicate that J. P. was decidedly below the average in general intelligence, in oral-reading accomplishment, and in comprehension. His rate of silent reading in the Courtis test was about normal. A study of his oral-reading record showed that he read simple passages rapidly and made few errors. Those which he made were of the following types: (a) repetitions to correct mispronunciations; (b) substitutions of such words as *the* for *their* and *was* for *were*, which did not change the meaning materially; (c) omissions of final syllables in such words as *greater* and *remarkably*; and (d) occasional additions to words as *neatly*

TABLE XIII

Tests	J. P.'s Scores	Standard Eighth-Grade Scores
The Illinois Intelligence Test.....	79	100
The Gray Oral Reading Test.....	33.75	48
The Burgess Silent Reading Test.....	14	50
The Courtis Silent Reading Test:		
Rate.....	188	191*
Comprehension.....	93	95*
The Monroe Silent Reading Test:		
Comprehension.....	9	26

\* Standard score for the sixth grade.

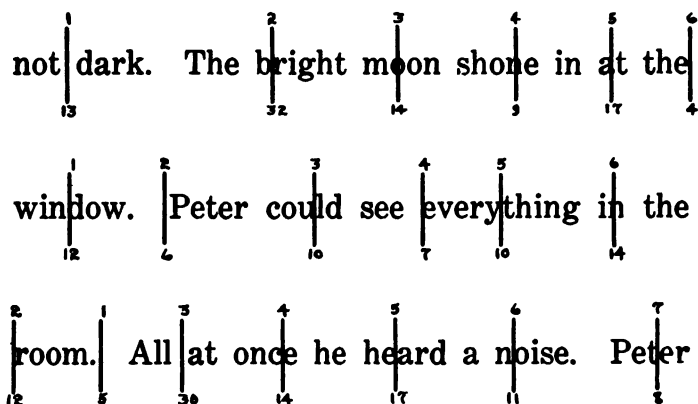
for *neat* and *boys* for *boy*. In the more difficult passages, his major difficulty was the partial mispronunciation of polysyllabic words, such as *antique*, *habitually*, and *ingratiatingly*. He also misplaced the accent in such words as *relatively*, *accurate*, and *azure*.

A close study of his test papers in silent reading revealed the following facts: (a) he completed five exercises correctly in the Burgess test, which is the standard number for a third-grade pupil; (b) he scored slightly below the sixth-grade standard in both rate and comprehension in the Courtis test; (c) his comprehension score in the Monroe test was far below the standard for the sixth grade; and (d) he scored higher in exercises in which the answers were found in the passages than in exercises which were problematic in nature or which required independent thinking. Inasmuch as his oral-reading record showed that he encountered little difficulty in the recognition of simple passages, it was clear that his failures in the interpretation of simple passages were not due

primarily to difficulties in the mechanics of reading. Therefore, the tentative conclusion was drawn that he had not formed the habit of directing his attention to the content of what he read or of thinking independently about it. In order to determine the validity of this conclusion, additional information was secured through a more detailed study of his reading habits.

*Detailed diagnosis.*—In the Jones Vocabulary Test he made a score of 98 on the sight list and a score of 100 on the phonetic list, indicating that he had very little difficulty in the recognition of simple isolated words. He made only three slight errors in the visual memory test, which indicated that difficulties in reading could not be attributed to poor visual memory.

PLATE IV



Photographic records of his eye-movements in both oral and silent reading were secured. A reproduction of a portion of the silent-reading record appears in Plate IV.

The record reveals regular habits of eye-movements, only one regressive movement appearing in the three lines which were reproduced. In order to compare his record with seventh-grade<sup>1</sup> standards the average number of fixations and regressive movements per line and the average duration of fixations were calculated and are included in Table XIV.

The entries in the table show that he made more fixations per line and made longer fixations in both oral and silent reading than an average

<sup>1</sup> No eighth-grade standards were available.

seventh-grade pupil. On the other hand, he made fewer regressive movements. The one noticeable weakness which was revealed by this study was the somewhat long duration of fixations, which indicated the need for exercises to increase his rate of recognition.

Informal tests in oral reading showed that he read monotonously and often ignored periods, which indicated that he was giving little or no attention to the content. He mispronounced only a few words in simple passages, which indicated a fair mastery of the recognition of short words. His difficulties in the pronunciation of polysyllabic words, however, indicated a need for training in syllabication and accent. Informal tests in comprehension showed that he could reproduce simple selections accurately and in great detail but that he was less successful in answering thought-provoking questions concerning the content. Questioning revealed the fact that he had not formed the habit of think-

TABLE XIV

ITEMS	ORAL READING		SILENT READING	
	J. P.'s Record	Seventh-Grade Standards	J. P.'s Record	Seventh-Grade Standards
Average number of fixations per line	9.6	8.7	8	6.8
Average duration of fixations.....	9.4	7	10.8	6
Average number of regressive movements per line.....	1.6	2	1.2	1.5

ing independently about what he read. In more difficult selections he was handicapped by his narrow background of experience and limited meaning vocabulary. In such selections he got only a few facts or missed the point of the story altogether. His responses to questions based on factual material were better than to questions which required the use of his imagination or the appreciation of subtle meanings.

*Summary of diagnosis.*—The diagnosis showed that J. P.'s mental age was three years below his chronological age, that he was distinctly retarded in oral-reading accomplishment and in the comprehension of what he read, and that his rate of silent reading approximated the standard for his grade. His difficulties in oral reading related primarily to the pronunciation of polysyllabic words. His eye-movement records in both oral and silent reading showed that his habits were normal with the exception that his fixations were somewhat longer than normal. Although he encountered some difficulties in the mechanics of reading,

the facts secured in the diagnosis showed clearly that his fundamental difficulty in both oral and silent reading was failure to interpret passages which were problematic in character or which required independent thinking. This was due to a narrow background of experience, a limited meaning vocabulary, failure to direct his attention to the content, ineffective habits of thinking while reading, and inherent incapacity to learn readily.

*Remedial instruction.*—Remedial instruction was organized with three major purposes in mind: (a) to secure his interest and co-operation in the reading of many relatively simple stories for the purpose of extending his experience and increasing his meaning vocabulary; (b) to develop the habit of looking for meanings in all reading exercises and of thinking independently about them; and (c) to develop independence in the recognition of polysyllabic words. In order to accomplish these purposes individual instruction was given for twenty-five minutes each day. The period was used largely for reports on assigned work, for discussions of outside reading, and for oral and silent reading with emphasis on interpretation. After the first three weeks a few minutes each day were devoted to exercises to develop independence in the recognition of polysyllabic words.

*Extending his experience and increasing his meaning vocabulary through quantitative reading of simple selections.*—His responses to questions based on the content of passages showed that many of the common facts and experiences which were described were unfamiliar to him; also, that he did not know the meaning of many words. In order to meet his needs in these respects, a large amount of relatively simple reading material, representing a variety of experiences, was assigned. The stories were discussed at length, meanings of words were explained and any additional information which would add interest to the reading was given. Some outside reading was assigned each day and he was asked to look for the meaning of unfamiliar words in the dictionary. The content of selections was discussed in order to clear up any points which were not clear. Suitable books were kept on the reading table and his interest was aroused in them by telling him a part of a story or by having him begin a book in class. When he became sufficiently interested in a story to want to complete it he was permitted to take the book home. This reading was for his own pleasure and he was not requested to report on it unless he volunteered to do so.

*Developing habits of accurate interpretation.*—The fact that he read monotonously, ignored periods, and failed to answer questions based on

the content of selections indicated that he did not habitually direct his attention to the content. He was given simple passages at first and was asked to read them orally in order to discover causes of failure. Constructive suggestions were then given as they were needed. Specific directions were given to center his attention on the important points. After preparing a reading assignment, questions were asked to test his mastery of the content and necessary explanations were given to make the meaning of passages clear. Later he was asked to read short selections silently and to reproduce what he read. In case of failure to interpret satisfactorily, he was asked to re-read parts of the story. At first, he was questioned concerning only the most important points; later, concerning significant details. As he gained in ability to interpret simple selections, more difficult ones were assigned.

*Developing ability to interpret passages of a problematic type and to think independently.*—Although he was soon able to reproduce a story accurately and to answer questions concerning the important points, if the story element was strong, he frequently failed to follow directions or to think independently about selections of a problematic type, even if the passages were very simple. In this connection he was given written directions, such as "Write a word which you think describes the fox in this story." "How many turtles were on the log?" "Draw a log, make crosses on it to represent the turtles, and make a large cross showing where Slow Little Turtle sat." "Write the names of the two animals that were friends." "If you think the horse should have been made king of the animals draw a circle around the word *horse*; if you do not think so draw a cross over it."

Thought-provoking questions were assigned in connection with the reading of a variety of selections, and every effort was made to stimulate independent thinking. For illustration, he was asked to summarize all of the facts which led up to a certain act, to characterize people, to determine the significance of people or incidents with reference to a plot, and to give reasons for his opinions. Attention was also given to figures of speech, subtle meanings, and important references of a geographical, historical, or literary nature. He was encouraged to ask questions when the meaning of a passage was not clear and he frequently brought to the teacher questions or references based on his reading in other subjects which he failed to understand. These were discussed and explained.

*Developing independence in recognition.*—His most noticeable difficulty in the mechanics of reading was his inability to pronounce polysyl-



labic words. He did not know how to divide words into syllables or where to place the accent. He was also unfamiliar with rules governing vowel sounds. When he failed to pronounce the word *progressively*, it was divided into syllables and he was first given *pro gress*, then *pro gress ive*, and finally *pro gress ive ly*. Other words beginning with *pro* were listed; also words ending with *ive* and with *ly*. Words containing other prefixes and suffixes were studied as difficulties arose and they were recorded in a notebook. New words were added at frequent intervals and the entire list was reviewed from time to time until he became familiar with the words. He frequently misplaced the accent in both short and long words. These were divided into syllables and the correct pronunciations indicated by means of accent marks. A list was made in his notebook of all such words and referred to frequently.

TABLE XV

Tests	October Scores	November Scores	Standard Eighth-Grade Scores
The Gray Oral Reading Test.....	33.75	45	48
The Burgess Silent Reading Test.....	14	50	50
The Courtis Silent Reading Test:			
Rate.....	188	191	191*
Comprehension.....	93	98	95*
The Monroe Silent Reading Test:			
Comprehension.....	9	22.32	26

\*Standard score for the sixth grade.

He voluntarily made lists of words which he encountered in other subjects. He was given help on these at first. Later he was encouraged to use the dictionary. Diacritical marks were explained and certain vowel digraphs which caused difficulty, such as *or*, *ar*, *ir*, *ur*, *aw*, *ew*, and *ow*, were studied. He was also given rules to assist him in determining whether vowels are long or short.

*Results.*—At the end of six weeks he was given the tests again. The scores which he made in October, his November scores, and the standard scores for his grade are included in Table XV.

The scores indicate that he had made considerable progress in silent reading. He had reached the standard for his grade in rate of reading. His comprehension score in the Courtis test was slightly above the standard and in the Monroe test somewhat below. It is significant that the instruction which he had received in interpreting what he read and in pronouncing polysyllabic words had brought him practically up to the standard in oral reading.

## CASE H

AN ELEVEN-YEAR OLD GIRL (UNCLASSIFIED) WHO WAS VERY POOR IN INTERPRETATION BECAUSE OF SLOW MENTAL AND PHYSICAL DEVELOPMENT, A NARROW RANGE OF EXPERIENCE, AND IMMATURE LANGUAGE HABITS

*Introductory statement.*—M. G. was eleven years old in October, 1921. She spoke indistinctly and in incomplete sentences. She was very timid and nervous and gave evidence of poor muscular control. A study of her early history revealed the fact that she did not attempt to walk until she was three years old, and that she was carried or had ridden in her cart most of the time until she was eight years old. She was very slow in learning to talk. The few words which she used at first were almost inarticulate. Following the removal of badly infected tonsils at the age of eight there was marked improvement in her physical condition. Because of the continued soreness of her throat after the operation, she spoke but very little for several months. Furthermore, she formed the habit of speaking indistinctly in order to avoid pain. When the study of her case began she still spoke as few words as possible, and with great effort. The constant care that had been necessary made her very dependent, and she had never learned to do things for herself. On entering school at the age of eight she was assigned to a room for retarded children. This plan was not successful and a private tutor was secured, under whose direction her speech improved somewhat and she learned to read mechanically. She had never associated with children, did not know how to play, and had few interests. Her range of information was limited and her general development was greatly retarded.

*Preliminary diagnosis.*—A preliminary study was made of the case through the use of standardized tests. The names of the tests which were used, M. G.'s scores, and standard scores for several grades are included in Table XVI.

The results of the tests indicated that M. G.'s mental age was five years below her chronological age. In oral reading she scored above the standard for the first grade, but below that of the second grade. In the silent-reading tests she was unable to interpret what she read.

An examination of her record sheet in oral reading showed that she read slowly and made numerous errors. She repeated frequently, substituted one word for another, and omitted and inserted words or parts of words. Her articulation was so inaccurate that it was scarcely possible to distinguish many of the words. The predominance of omissions among her errors was consistent with her inability to speak in com-

plete sentences. The errors which she made indicated clearly that she gave little or no attention to the content of what she read. On the other hand, her ability to recognize words was surprising and difficult to explain. In the Burgess Silent Reading Test she read four exercises in the required time but did not understand them. In the Haggerty Reading Examination, Sigma I, it was very evident that she was unfamiliar with experiences common to first-grade children. For example, she did not know the meaning of the words *cross* and *circle* and was unable to follow the directions. When directed to put an eye on the bird, she put an eye on both the fish and the bird, thus indicating that she did not discriminate carefully in her reading. In the Monroe and Courtis tests, she was unable to read the paragraphs and to answer the questions concerning them.

TABLE XVI

Tests	M. G.'s Scores	Standard Scores
The Stanford Revision of the Binet-Simon Tests	53.7	100
The Gray Oral Reading Test.....	43.75 Grade I	31
	29 Grade II	43
	17.5 Grade III	46
	0 Grade III	50
The Burgess Silent Reading Test.....		
The Courtis Silent Reading Test:		
Rate.....	82 Grade II	84
Comprehension.....	0 Grade II	59
The Haggerty Reading Examination, Sigma I...	0 Grade I	4
The Monroe Silent Reading Test:		
Comprehension.....	0 Grade III	6.8

In the intelligence tests she was unable to describe pictures and could not incorporate three words into a sentence, reproduce simple figures in drawing, or define such simple words as *yellow* and *tiger*. Most of the words in the vocabulary test were not familiar to her. Many of the things which she was asked to do seemed quite new to her, indicating a lack of experience common to most children. She did not possess sufficient language ability to express herself even in familiar situations. It was apparent from her numerous failures that she was either incapable of doing effective thinking or that she had been given little opportunity to exercise her own judgment and to think independently. On the other hand, she executed simple directions quickly and accurately in a number of cases. When given definite things to do which were within her range of experience, she responded readily.

The preliminary diagnosis suggested three tentative conclusions in regard to her reading accomplishments: (a) she made frequent errors

in reading simple sentences due primarily to ineffective language habits; (b) she encountered numerous difficulties in reading passages containing unfamiliar words due to inadequate habits of recognition; and (c) she failed almost completely in the interpretation of what she read, due to lack of experience and poor habits of thinking. Furthermore, it seemed probable that her weakness in interpretation accentuated her difficulties in the mechanics of reading.

*Detailed diagnosis.*—Three tests were given for the purpose of studying in detail her difficulties in the mechanics of reading. In the Jones Vocabulary Test she made a score of 83.9 on the phonetic list, and a score of 90.6 on the sight list. These scores indicated that she recognized simple isolated words fairly well for a first-grade pupil, but very poorly for an eleven-year-old child. In the visual memory test, she made a score of 50. Her chief difficulty consisted in failure to scrutinize the forms and numbers carefully. In some cases she seemed confused, and in order to conceal her weakness she did not take sufficient time to note details. In the short-exposure tests, she encountered considerable difficulty in the recognition of individual letters and of two-letter words, but made few errors in the recognition of longer words and short phrases. She recognized most of the three-word phrases at the first exposure. These results were surprising inasmuch as she seemed to recognize individual words while reading rather than a group of words at each fixation. The results indicated, however, that the possibilities were very good for developing a wide span of recognition in reading.

Informal tests of oral reading showed considerable ability in the recognition of simple words. On the other hand, she frequently omitted parts of words or miscalled words when she saw them in context. She could correct such errors without help when her attention was called to them. She pronounced final consonants clearly only when she made conscious effort to do so. Her inability to speak distinctly and in complete sentences accounted for this difficulty, as well as for many of her errors in oral reading.

Informal tests of comprehension were given in both oral and silent reading. She encountered more difficulty in reproducing or answering questions about passages which she read silently than about those which she read orally. In either case her reproductions were inadequate and her sentences incomplete and unrelated. When asked questions which required independent thinking she failed completely. After a study period in which passages were assigned for silent reading, she often admitted that she had not read them. On inquiry it was found that

she had always read orally and that she had never learned to read silently. The audible pronunciation of the words seemed to be prerequisite in her case to an understanding of what was read. Another characteristic which was noticeable in all of her reading was her inability to direct her attention to the page long enough to complete a paragraph. She often stopped in the middle of a sentence to look at the pictures or to look around the room. Furthermore, she frequently failed to stop at the end of a sentence, thus indicating that she gave little or no attention to the content of what she read and that she merely pronounced words.

*Summary of diagnosis.*—The diagnosis revealed the fact that M. G. was greatly retarded in both her mental and physical development, that her language habits were distinctly immature and inadequate, that she had never associated with children of her own age and not had the experiences which were common to them, and that she depended largely on others to supply her needs. In regard to her accomplishments in reading, three very significant sets of facts were discovered.

1. In oral reading she was superior to an average first-grade pupil but poorer than an average second-grade pupil. Her most frequent errors were omissions of words or parts of words and inaccurate articulation. These were accounted for primarily by her immature language habits. As a result of previous instruction, she was able to recognize accurately words whose meanings she did not know.

2. Her rate of silent reading was approximately equal to the standard rate for the second grade. This was explained by the fact that she frequently did not read although she appeared to be doing so. Furthermore, her relatively wide span of recognition was more or less a potential possibility than an actual achievement in silent reading. Finally, her accomplishment in rate was complicated by the fact that she habitually pronounced words aloud in reading.

3. Her weakness in interpretation was the most noticeable and significant characteristic of her reading. It was due to a series of closely related causes, namely, undeveloped language habits, a limited meaning vocabulary, a narrow range of experience, failure to direct her attention to the content of what she read, and distinctly retarded mental development which resulted in inability to think independently.

*Remedial instruction.*—The first steps in the program of remedial instruction aimed (a) to enlarge her background of experience, (b) to develop more effective language habits, and (c) to stimulate habits of intelligent interpretation and effective thinking. In organizing remedial

instruction it was planned to give only incidental attention to the mechanics of reading until marked progress had been made along other lines. Forty-five minutes were given each day to individual instruction and included three types of training. A part of each period was spent in visiting various places of interest in an elementary-school building for the purpose of securing new and interesting experiences. A short time was then devoted to conversation relating to these experiences and to other topics of interest. The last part of the period was devoted to instruction in reading. The entire period was informal and every effort was made to gain her confidence.

*Enlarging her background of experience.*—No instruction was attempted during the first few days. The time was spent in visiting the playground, gymnasium, classrooms, and other places of interest in the building. This gave her an opportunity to get acquainted with her teacher and her surroundings. She observed children at work and at play, and came in contact with toys, equipment, books, and materials of all kinds. She was encouraged to talk freely and to ask questions about the things which interested her. At first she was timid and content merely to observe, but later she voluntarily sought opportunities to enter into the activities and to become a part of a group. Often she was invited to play games or to read with a class, and was supplied with material when the pupils were making things. She began to connect the things which she saw with her own experiences, and she saw new possibilities in materials. She played in the doll house and toy store when the children were not using them, watched the progress of various projects, asked how to make many things, and became interested in the pets which were in the classrooms and watched them from day to day. She brought her lunch occasionally in order that she might have the experience of being with the children at noon on the playground. This was her first real contact with other children and most of the experiences were new to her. New interests were created and she began to imitate other children. She soon asked for the things which she needed to carry out her plans. She decided for herself what she wished to do, and gradually began to exercise her own judgment in regard to various matters.

*Developing effective language habits.*—At first she volunteered very few statements about her visits and the things which she saw. Her answers to questions were usually in monosyllables. Occasionally she would say "Nice game" or would make an incomplete statement about

something which interested her. One day the reading table in the first-grade room attracted her attention. She found a book containing pictures and stories of farm animals. She began to talk rapidly about the pictures, trying to explain that she had visited a farm and had had a good time. Questions were asked and words supplied to assist her in telling what she wished to say. After discussing the pictures, she was asked to select stories to read. The stories were simple and because of her interest she had little difficulty in reading them. This was the first evidence of a desire to read.

She became interested in building a farm in the sand pan. She watched it from day to day, and frequently asked questions or volunteered some information of her own. A visit to the playground or classroom usually resulted in an outburst of conversation. She wanted to tell what she saw or to ask questions. When she did not speak in complete sentences, they were supplied but no comments were made. In a short time she unconsciously repeated these sentences. She was often asked to tell what she saw when she went downtown, and an interest was shown in her activities at home. She began to report voluntarily on what she had seen or done. She also began to repeat at home some of her experiences at school, to retell stories, and to take part in the conversation. She often surprised the family by offering an opinion or by volunteering some information.

*Developing habits of intelligent interpretation.*—Although numerous devices were employed in establishing habits of thoughtful reading, only three of the more significant methods will be described here on account of the limitations of space.

1. She was assigned some reading to prepare at home each day. Part of a story was told to her or her curiosity was aroused by questions in order to stimulate a desire to read. The selections were short and very simple at first. She was asked frequently to reproduce a story which she had read at home. This furnished a motive for her reading and because she knew she might be asked to tell the story, she directed her attention to the content. Her first reproductions were very fragmentary and showed that she comprehended very little of what she read. She was often able to give only two or three incomplete sentences as "Dog ran away. Boy cry." When her reproductions were very unsatisfactory, she was asked to re-read the story. In these cases, questions or suggestions prefaced each unit to enable her to carry forward the thought. The meanings of words were explained and passages were discussed. After this method of procedure had been followed for

several weeks she was able to reproduce the important parts of a story satisfactorily. Occasional questions were necessary to enable her to tell the incidents in correct sequence.

She was often asked to read one of the prepared stories aloud and special attention was given to the improvement of her oral-reading habits. The fact that the story was familiar enabled her to read more fluently and accurately. It also lessened her tendency to stop in the middle of sentences and paragraphs to look at pictures or at the next page. After acquiring the habit of reading without distraction she was able to concentrate more effectively when reading unfamiliar stories. She read very monotonously at first or emphasized unimportant words. Such questions as "What kind of fox was he?" helped her to emphasize the correct words and to read with better expression.

2. After three weeks of instruction of the types which have been described she was assigned some sight reading each day. Her interest was aroused and her attention directed to the content by discussing pictures with her, by telling a part of the story to her, by asking her to read to find out what happened next, or by such a suggestion as "The boy in this story wanted a dog. Read the story to find out how he got it." After reading the selection she was encouraged to discuss it and to express her own opinion about it, or questions were asked to test her ability to interpret the thought. For example, such directions and questions as the following were given: "Name all of the animals that the donkey met and tell how each one helped him. How was this story different from the other story about these same animals which you read? Which story did you like better? Why?"

3. When silent reading was introduced during the seventh week she was asked to read only a short paragraph or unit containing one clearly defined point. Short units were cut from books and mounted on cardboard for the first reading. Her attention was directed to the thought of the passage by giving her definite things to find out. At first an audible pronunciation of words was necessary to an understanding of what was read. As her ability to get the thought increased, the audible pronunciation of words decreased. The length and difficulty of the passages which were used increased gradually. In the case of the longer selections several questions which directed her attention to the important points of a story were written on the board. She was asked to answer these questions after reading a selection. At first it was often necessary to re-read passages aloud before she could answer all of the questions.



The following device is given to illustrate the methods used to test her ability to read silently and to encourage her to think independently. After she had read a selection, directions were written on the board, such as "Draw a line under the name of the animal in this story which you liked best." "Tell why you liked that animal best." "Write the name of the girl who had the party."

As soon as she was able to interpret what she read silently, the assignments for home work were changed from oral to silent reading. Supplementing the assigned work in silent reading, books were given to

TABLE XVII

Tests	October Scores	December Scores	Standard Scores
The Stanford Revision of the Binet-Simon Tests . . . . .	53.7	60.8	100
The Gray Oral Reading Test	43.75 Grade I	66.25	31
	29 Grade II	46.25	43
	17.5 Grade III	41.25	46
The Burgess Silent Reading Test . . . . .	0	38 Grade III	50
The Courtis Silent Reading Test:			
Rate . . . . .	82	91.6	84 Grade II 113 Grade III
Comprehension . . . . .	0	66.6	59 Grade II 78 Grade III
The Haggerty Reading Examination, Sigma I:			
Test I . . . . .	0	14	12 Grade II 16 Grade III
Test II . . . . .	0	13	8 Grade II 14 Grade III
The Monroe Silent Reading Test:			
Comprehension . . . . .	0	3	6.8 Grade III

her to read for her own enjoyment. These stories were often begun in class to arouse her interest and she would then take them home to finish. She was not required to discuss their content but she was given every opportunity to do so. Before the end of nine weeks of instruction she was genuinely interested in reading and had voluntarily read several books and many short stories for her own entertainment in addition to the books which were assigned and read during class periods.

*Results.*—After nine weeks of instruction the standardized tests were given again. Her scores before training, after training, and the standard scores are included in Table XVII.

The intelligence tests were given again at the close of the training period to determine what effect, if any, extending her experience, stimulating her interests, developing her language habits, and increasing her ability to read fluently and intelligently had had upon her general intelligence as measured by the Stanford Revision of the Binet-Simon Tests. The score indicated that she ranked approximately a year higher than she did before the training began.

The reading tests showed that she had gained more than a year in oral-reading accomplishment and between two and three years in ability to interpret what she read. Her rate of silent reading had also increased. It was evident from these facts that the remedial instruction had been distinctly successful in increasing her comprehension of what was read. It was also evident that, in a short time, she would have made sufficient progress in interpretation to justify specific attention to such matters as the rate of reading and the recognition of difficult words.

#### SUMMARY OF CAUSES OF FAILURE

The four cases which have been described in this chapter present an interesting list of causes of difficulty or failure in interpretation. They are (a) lack of training in intelligent interpretation, (b) failure to direct attention to the content while reading, (c) inadequate or ineffective habits of thinking, (d) a narrow range of experience concerning the things referred to in selections, (e) inadequate reading experience in certain types of selections, such as factual and problematic, (f) immature language habits which resulted in failure to grasp the meaning of many commonly used forms of expression, and (g) an overcultivated imagination which resulted in reading into passages things which were not there. Other causes of failure in interpretation which are emphasized in other chapters of this monograph are (a) difficulties in the mechanics of reading, (b) lack of interest in reading, (c) inadequate learning capacity, (d) careless habits of reading, (e) inattention, (f) lack of feeling of responsibility for the content, and (g) ineffective application. It is significant that most of the causes of inadequate interpretation can be removed if effective methods of instruction are employed.

#### CONCLUSION CONCERNING REMEDIAL INSTRUCTION

An analysis of the reports of individual cases in this chapter shows clearly that there are certain suggestions which may be followed to advantage in organizing remedial instruction for any pupil who encounters difficulties in interpretation. (1) The interest of the pupil must be

aroused and his co-operation secured. (2) Selections must be used which are directly related to the interests of the pupil. (3) A factual background must be developed in order to secure accurate interpretations. (4) Specific problems must be assigned during the early part of the training period in order to direct the pupil's attention to significant points. (5) The problems which are assigned at first should be relatively simple and should increase in difficulty as rapidly as the pupil's power of interpretation develops. (6) Different types of problems must be assigned from time to time in order to insure growth in all important phases of interpretation. (7) Responsibility for independent interpretations must eventually be imposed on the child. This means that he must re-read or study passages several times, if necessary, in order to secure adequate interpretations. (8) The co-operation of the teachers of content subjects must be secured in order to insure the establishment of good habits of interpretation in all reading activities.

## CHAPTER VI

### PUPILS WHO ENCOUNTERED DIFFICULTIES PRIMARILY IN THE MECHANICS OF READING

The reports which are included in this chapter describe the cases of six pupils who encountered serious difficulties in the mechanics of reading. Although some of these pupils were below the standards for their grades in the interpretation of what they read, no case is reported in which difficulties in the mechanics of reading were not far more serious than those in interpretation. On the other hand, considerable emphasis was given to interpretation in the remedial instruction for two reasons. (1) Very little, if any, instruction in reading should be given in which attention is not directed primarily to the content. Legitimate exceptions are drill exercises to establish specific habits, such as a wide span of recognition or an accurate return sweep from the end of one line to the beginning of the next. (2) Some pupils whose fundamental difficulties were in the mechanics of reading also interpreted what they read inadequately. In such cases, remedial instruction included specific exercises to improve their ability to interpret.

It is significant that pupils from the third to the seventh grade inclusive are reported as notably weak in the rudimentary phases of reading. It indicates failure on the part of teachers in the lower and middle grades to establish fundamental habits and associations effectively. Although a thorough mastery of the mechanics of reading is far less significant than ability to interpret accurately, recent investigations show clearly that pupils who have not learned to read fluently and accurately are seriously handicapped in interpreting the printed page. It is of very great importance therefore that teachers in the lower grades test pupils frequently, keep accurate records of their progress, and provide individual instruction frequently in order to insure a thorough mastery of the mechanics of reading before a pupil is promoted to the middle grades. In securing these results, however, attention should be given primarily to the problem of establishing habits of thoughtful reading.

A significant fact concerning all of the cases reported in this chapter is that they scored relatively low in the Gray Oral Reading Test. Furthermore, they read aloud inaccurately and failed to group words

effectively in thought units. A detailed analysis of their habits of reading showed that in most cases they made a large number of fixations per line, that regressive movements were frequent, that they had a narrow span of recognition, and that they encountered unusual difficulties in the recognition of words. Furthermore, some of the pupils who were able to recognize simple words when they were presented individually failed to recognize them accurately in sentences. Although most pupils who encounter difficulties in recognition read very slowly, at least two of the pupils whose cases are reported made numerous errors because they read aloud too rapidly and failed to note the details of words with sufficient care. In addition to the significant difficulties which were encountered by all of these pupils, each presented distinguishing characteristics which can be described best in the detailed reports which follow.

#### CASE I

A THIRD-GRADE GIRL WHO WAS VERY INACCURATE IN RECOGNITION BECAUSE OF DIFFICULTIES IN LEARNING TO READ WITH BIPOCAL VISION AFTER HAVING LEARNED TO READ WITH ONE EYE

*Introductory statement.*—In October, 1921, S. L. was ten years and one month old. Her mother had formerly been a teacher of the primary grades and had supervised her school progress carefully. Her parents were in comfortable circumstances and home conditions were favorable to rapid development. She had entered the kindergarten at the age of four. Her progress had been normal to the middle of the third grade, at which time she was able to read quite fluently. On account of ill health she remained out of school for a year and a half. She entered the University Elementary School in the autumn of 1921 and it was soon discovered that she encountered numerous difficulties in reading.

*Preliminary diagnosis.*—Table XVIII contains the names of the tests which were used in the preliminary diagnosis of the case, the scores which S. L. made, and the standard third-grade scores.

The results of the tests indicate that S. L. was a girl of normal intelligence, that she was retarded approximately a year in oral-reading accomplishment, that her rate of silent reading was above the average for a third-grade pupil, and that she was distinctly inferior in comprehension. The oral-reading records showed numerous repetitions, partial mispronunciations, such as *never* for *ever* and *short* for *sort*, and frequent omissions and insertions of short words. On the other hand, the number of totally mispronounced words was very small. It was observed that during the course of both the oral- and the silent-reading tests, her eyes tired frequently and failed to co-ordinate. If she dis-

continued reading for a moment or two her eyes would focus properly and she was able to proceed with her reading. The unusual number and character of her errors, as well as the difficulties which she had with her eyes led to the tentative conclusion that her fundamental difficulty was probably in recognition rather than in interpretation. This conclusion was further supported by results secured through the use of

TABLE XVIII

Tests	S. L.'s Scores	Standard Third-Grade Scores
The Stanford Revision of the Binet-Simon Tests.....	91	100
The National Intelligence Tests.....	109	100
The Gray Oral Reading Test.....	42.5	46
The Burgess Silent Reading Test.....	0	50
The Courtis Silent Reading Test, No. 2:		
Rate.....	120	113
Comprehension.....	45	78
The Monroe Silent Reading Test:		
Comprehension.....	1	6.8

passages in the Courtis Silent Reading Test, No. 2. In these tests she interpreted very well what was read to her but failed to interpret satisfactorily what she read orally or silently. These results indicated that the demands of recognition interfered seriously with effective interpretation.

*Detailed diagnosis.*—Additional steps were taken to determine more fully the nature of her difficulties in recognition. The Jones Vocabulary Test was given to measure her mastery of first-grade words. She made a score of 93.7 on the sight list and a score of 80.5 on the phonetic list. Several of the errors which were made in each test were partial mispronunciations, such as *run* for *ran*. They indicated failure on her part to recognize the details of words accurately. Many of the errors on the phonetic list were due to the fact that her eyes were tired and were not co-ordinating properly.

In order to determine whether or not her partial mispronunciations were due to lack of phonetic ability, a series of simple tests similar to Word Element Test A were given which were based on words that she had mispronounced. The results showed clearly that she was quite familiar with the sounds of initial consonants and family endings, and that she could apply them in the independent recognition of unfamiliar words. A visual memory test was given to determine evidences, if there were any, of poor visual memory. Inasmuch as she made only

one slight error in the test it was concluded that failures in recognition were not due to defective visual memory.

Attempts to photograph her eye-movements were unsuccessful because of the colored lenses which she was required to wear. It was possible, however, to give the short-exposure tests to determine facts concerning her span of recognition. The first time the isolated letters were exposed, forty-three errors were made. On the following day she recognized them with only six errors and on a third day with twenty errors. As far as could be determined these differences were due to the condition of her eyes on the days the tests were given. In general, she made frequent errors in the recognition of isolated words and short phrases. Questioning revealed the fact that the content helped her in the recognition of phrases.

Although the diagnosis showed that she encountered serious difficulties in both recognition and interpretation the specific nature of her difficulty was not satisfactorily explained until her case had been thoroughly discussed with her mother. At the time S. L. withdrew from school in the third grade it was discovered by an oculist that she had been using her left eye to such an extent that the muscles of her right eye had deteriorated considerably. According to his judgment she had been seriously afflicted with astigmatism in the right eye since her birth. When glasses were secured which restored the use of her right eye, she had to adjust herself to bifocal vision. This caused great difficulty at first, resulting in considerable uncertainty in walking. Gradually she gained in ability to see things clearly. When she tried to read she encountered visual difficulties similar to those which she had experienced in walking. Inasmuch as she enjoyed interesting stories, she insisted on reading. On account of her visual difficulties she frequently found it necessary to guess the pronunciation of words and the meaning of passages with the result that careless inaccurate habits of reading had developed.

*Summary of diagnosis.*—The diagnosis showed that S. L. was a girl of normal intelligence who ranked below the average for her grade in most phases of reading. A careful analysis of her difficulties revealed the fact that her fundamental weakness was in recognition rather than interpretation. In this connection the following specific difficulties were noted: (a) inaccurate recognition of the details of words; (b) inaccurate recognition of words in thought groups; and (c) a narrow span of recognition. As far as could be determined these deficiencies were due to difficulties encountered in adjusting herself to bifocal vision.

*Remedial instruction.*—It is evident from the facts presented in the diagnosis that the fundamental purpose of remedial instruction was to reorganize her reading habits and to substitute accurate habits of recognition for the inaccurate ones which had developed. In this connection, four specific aims were adopted about which the remedial instruction was organized. They were (a) to develop accuracy in the recognition of words, (b) to increase the span of recognition, (c) to develop better habits of grouping in oral reading, and (d) to provide many opportunities for reading simple interesting selections.

In order to accomplish these purposes one-half hour each day was devoted to remedial instruction. In general the period was divided into three divisions. Ten minutes were given to the flash-card exercises to aid in developing more accurate habits of recognition and a wider span of recognition. Ten minutes were used for sight reading of easy material and the remainder of the period was devoted to reading more difficult passages which had been previously assigned. In addition a large amount of very simple supplementary reading was required.

Because she had developed rapid, inaccurate habits of reading and because many of her recent experiences in reading had been limited to street and store signs it was necessary, first of all, to refine her reading habits from the broad sweeps which take in large units more or less inaccurately to more deliberate analyses of smaller units. Accordingly flash-card exercises were prepared making use first of short phrases, and then gradually introducing longer phrases and groups of words composed of natural thought units. These were used during the first part of the training period to increase her span of accurate recognition.

During the time devoted to the reading of easy material at sight, attention was frequently called to the words which formed natural groups of units. A considerable amount of time was devoted to reading typewritten stories in which the natural thought units were widely separated so as to direct attention to them and to develop the habit of effective grouping in reading. An effort was also made to develop better habits of eye-movements such as passing rapidly from the end of one line to the beginning of the next. A part of the daily training period was given to silent reading after which S. L. was required to give a brief reproduction of the main thread of the story. This was done to determine if thoughtful habits of reading were being developed.

In the last part of the recitation period the time was used for more intensive types of reading. In this connection, she was assigned definite units of material for preparation. Generally she was given an opportu-



nity to tell what she had read and, if necessary, questions were asked to bring out all the important ideas of a selection. The teacher then assigned new material which S. L. read for the purpose of reproducing or of answering assigned questions.

*Results.*—The results of the remedial instruction are shown in Table XIX, which compares her scores at the beginning and end of the training period with the standard scores.

TABLE XIX

Tests	October Scores	December Scores	Standard Third-Grade Scores
The Gray Oral Reading Test.....	42.5	51.25	46
The Burgess Silent Reading Test.....	0	50	50
The Curtis Silent Reading Test, No. 2:			
Rate.....	120	118	113
Comprehension.....	45	94	78
The Monroe Silent Reading Test:			
Comprehension.....	1	5	6.8

This table shows that she made marked progress in oral-reading accomplishment and in interpretation during the training period, but no progress in rate of reading. This is explained by the fact that she had previously formed the habit of skipping along the lines, recognizing only those words with which she was most familiar. The formation of more thoughtful reading habits had resulted in retarding for a time, rather than increasing her rate of reading.

TABLE XX

Tests	December Scores	March Scores
The Gray Oral Reading Test.....	51.25	56.26
The Burgess Silent Reading Test.....	50	68
The Curtis Silent Reading Test:		
Rate.....	118	156
Comprehension.....	94	100
The Monroe Silent Reading Test:		
Comprehension.....	5	8

Specific training was discontinued in December, 1921, on the assumption that the reading which would be required in regular classroom exercises would add to the progress which had been made by the time the December tests were given. On March 6 and 7, 1922, check tests were given to determine the validity of this assumption. The results are included in Table XX.

The results show clearly that the improvement which had been secured during the training period was retained and, in addition, that marked progress had been made in every phase of reading during the two months following the training period. The fact should be noted that a very creditable increase in rate of silent reading had been made by the time of the March tests.

## CASE J

A SEVENTH-GRADE BOY WHO WAS RETARDED IN THE MECHANICS OF READING  
BECAUSE OF CARELESS HABITS OF READING, DEFECTIVE VISION,  
AND INADEQUATE ATTENTION TO THE CONTENT

*Introductory statement.*—G. R. was fourteen years old in October, 1921. He was overgrown, awkward, nervous, and temperamental. He used an unnecessary amount of energy on anything which interested him, but he was otherwise lazy and indifferent. His school history showed that he had been out of school the whole of one year and had been absent frequently during other years on account of illness. He had attended several public schools and a private school for one year, but had never done satisfactory work. When the study of the case began, no physical defects were reported. A second examination of his eyes was advised later and it was discovered that he needed glasses.

*Preliminary diagnosis.*—A preliminary study of the case was made through the use of standardized tests. The names of the tests, G. R.'s scores, and the standard seventh-grade scores are included in Table XXI.

TABLE XXI

Tests	G. R.'s Scores	Standard Seventh-Grade Scores
The Illinois Intelligence Test.....	90	100
The Gray Oral Reading Test.....	22.5	47
The Burgess Silent Reading Test.....	44	50
The Courtis Silent Reading Test:		
Rate.....	193	191*
Comprehension.....	89	95*
The Monroe Silent Reading Test:		
Comprehension.....	31	22.8

\* Standard score for the sixth grade.

The scores indicate that G. R. was somewhat below the standard in general intelligence and decidedly retarded in oral reading. He was above the average for his grade in rate of silent reading but below the average in ability to comprehend what he read in all but one test. A

study of his oral-reading record showed that he read simple passages rapidly but very inaccurately and totally mispronounced many polysyllabic words in more difficult passages. His major errors were (a) repetitions, (b) omissions and insertions of short words, (c) substitutions, such as *dark* for *dull*, *which* for *such*, and *beautiful* for *pretty*, and (d) miscalling or omitting final syllables such as *farmer* for *farming*, *busy* for *business*, and *great* for *greater*. In the silent-reading tests he had little difficulty in answering simple questions, but was less successful in exercises which required careful discrimination. Inasmuch as he made numerous errors in reading very simple passages, the tentative conclusion was drawn that his low scores in comprehension were due primarily to inaccuracies in recognition and to careless habits of reading. In order to secure additional information concerning the exact nature of his difficulties a more detailed study of the case was made.

*Detailed diagnosis.*—In the Jones Vocabulary Test he made a score of 91 on the sight list and 92 on the phonetic list. This represents a large number of errors for a seventh-grade pupil. In the sight list his errors were omissions or additions of final letters or syllables, such as *leaf* for *leaves*, *puss* for *pussy*, *not* for *no*, and *trees* for *tree*. In the phonetic list there was usually an error of only one letter, such as *rang* for *ring*, *bride* for *pride*, and *sank* for *sink*. He made only one error in the visual memory test, which indicated clearly that inaccuracies in recognition were not due to poor visual memory.

Informal tests in oral reading showed that he constantly mispronounced parts of familiar words. He recognized them when they were isolated but he omitted final syllables, substituted words which were similar in form, or reversed the order of words in sentences. His most noticeable error in simple passages was inaccuracy in the recognition of words in groups. He also encountered difficulty in the recognition of polysyllabic words. He had no idea of syllabication and attempted to determine the pronunciation of words by spelling them. He had had some phonetic training but was unable to use it intelligently as an aid in recognition. His aim in reading seemed to be to proceed rapidly. As a result he omitted and inserted words; he did not enunciate clearly, and his pronunciation was very inaccurate. When asked to read slowly and distinctly, he did noticeably better.

Informal tests of comprehension revealed the fact that when he directed his attention to the content of what he read, he was able to reproduce simple passages and to answer thought-provoking questions satisfactorily. His failure in tests of a problematic nature was due

largely to inaccurate reading and to careless habits of thinking. In difficult material his inability to recognize words interfered with effective interpretation. He had greater difficulty when reading silently than when reading orally. This was easily explained by the fact that in reading orally he had to read more carefully, which resulted in greater concentration of attention. These facts showed that he encountered some difficulties in interpretation because he did not direct his attention effectively to the content of what he read. Furthermore, it was clear that the most significant cause of difficulty in both oral and silent reading was his weakness in recognition.

*Summary diagnosis.*—The diagnosis showed that G. R. was below the average in general intelligence, decidedly below the standard for his grade in oral reading and somewhat retarded in interpretation. He read aloud rapidly but did not enunciate clearly and failed notably in the accurate recognition of simple words in sentences and of polysyllabic words. The fact that he could read far better when he made conscious effort to read accurately suggested that his errors in recognition were due, in part, to careless habits of reading. Inasmuch as a thorough examination of his eyes revealed the fact that he needed glasses, it was concluded that defective vision had also contributed to his inaccuracies in recognition. He read silently more rapidly than the average pupil of his grade, but the inadequacy of his interpretation indicated that he did not read with sufficient care. His poor record in the interpretation (a) of simple passages was due primarily to inaccuracies in recognition and to careless habits of reading, and (b) of more difficult passages to weaknesses in recognition and to poor habits of thinking while reading.

*Remedial instruction.*—The facts brought out in the diagnosis led to the adoption of the following aims for remedial instruction: (a) to overcome habits of careless reading by directing his attention to the content of simple passages and by holding him responsible for accurate interpretations; (b) to increase his accuracy in the recognition of simple words in groups and to develop independence in the recognition of polysyllabic words; and (c) to increase his ability to interpret difficult passages and to develop habits of thinking independently about what he reads. In order to accomplish these aims twenty-five minutes were given each day to individual instruction.

*Overcoming habits of careless reading: (a) By directing his attention to the content.*—Many of his errors in recognition were due to the fact that he did not direct his attention to the content. He was frequently

asked, therefore, to read a selection silently before reading it aloud. The content was then discussed to insure accurate interpretation. This usually enabled him to read aloud more accurately. Sometimes a part of a story was told to him in order that he might secure some idea of its content before reading it. When sight reading was assigned, he was given definite things to look for. Questions were asked or suggestions were made from time to time as he read, in order to center his attention on the essential points. When he had the content of a selection in mind, he was able to anticipate the pronunciation of many words which he might otherwise fail to recognize. Consequently the number of errors decreased noticeably.

(b) *By holding him responsible for careful work.*—He read so rapidly that he made many careless errors in recognition, failed to pronounce words which he knew, and did not enunciate clearly. In order to overcome these difficulties, two steps were taken: (1) selections were chosen which would stimulate keen interest in reading; and (2) every effort was made to enlist his co-operation in the elimination of errors. He was asked to read more slowly, to read exactly what was on the page, and to pronounce the words distinctly. When his attention was called to errors and when he made a conscious effort to read accurately, he did noticeably better. After a few weeks, he frequently passed judgment on his reading. He voluntarily re-read passages which he had not read well, and commented on his own improvement.

*Overcoming difficulties in recognition:* (a) *By increasing accurate recognition of groups of words.*—The words which caused greatest difficulty were written in sentences on the blackboard. Parts of the sentences were then erased, leaving the phrases which contained the difficult words. Quick-perception exercises were also used in increasing his span of accurate recognition. He was frequently unable to distinguish between such words as *come* and *came* and *run* and *ran* when he saw them in sentences. These words were used repeatedly in sentences and phrases. They were finally printed on cards and used in quick-perception drills.

(b) *By using phonetics as an aid in recognition.*—He had great difficulty in recognizing words beginning with certain consonant blends, such as *sw*, *spr*, *scr*, *gl*, *pl*, and *fr*, and also words containing such vowel digraphs as *ar*, *or*, *ew*, and *ou*. The words which caused difficulty were written on the board. In order to make correct sound associations with the elements which caused difficulty, lists of words containing them were studied. He was usually able to recognize words on which he had failed

after pronouncing other words containing the same phonetic element. He was also given several simple rules which enabled him to determine the pronunciation of some words independently.

(c) *By developing independence in the recognition of polysyllabic words.*—Because his method of analyzing words was inaccurate, he was confused when he encountered long words. Such words were therefore divided into syllables in order that he might see the familiar words, or parts of words, of which they were composed. His attention was then called to the prefixes and suffixes and a study was made of their meanings. He was asked to supply other words containing them. These were later used in drill exercises. The knowledge which he gained through the training in phonetics enabled him to determine the correct pronunciation of many syllables and words.

*Increasing his ability to interpret difficult passages and developing habits of independent thinking.*—He had done very little reading voluntarily before the training began and it was quite evident that he was not interested. He read stories in a cursory manner and was satisfied with a general impression of them. He neglected all details and did little independent thinking about what he read. In order to establish habits of thoughtful reading, relatively simple selections were assigned at first and accurate interpretations were required. Later more difficult passages were used. He was asked to read them silently and his attention was directed to the content through the use of questions, directions, and suggestions. He was frequently asked to reproduce a story, emphasizing the important points, or he was asked to answer thought-provoking questions. Lists of questions were prepared when longer selections were assigned for outside reading. The answers to these questions were discussed on the following day and additional questions were asked to stimulate effective thinking.

He frequently brought to the special teacher selections which his classmates were reading. These were usually read aloud; the stories were discussed; the meanings of words were made clear; and references were explained. He was asked to express his own opinion about the stories, to tell why certain things happened, to characterize people, and to anticipate how stories would end. A number of books which were begun in class and completed outside were also discussed in the same way.

*Results.*—He was given the tests again at the end of eleven weeks. The scores which he made in December, his October scores, and the standard scores for his grade are included in Table XXII.

The scores indicate that he had made satisfactory progress in oral reading and that he was above the standard for his grade in comprehension and in rate of silent reading. His December score in the Monroe test, however, was lower than his October score, which was explained by the fact that he had read carelessly while taking the Monroe test.

TABLE XXII

Tests	October Scores	December Scores	Standard Seventh-Grade Scores
The Gray Oral Reading Test.....	22.5	32.25	47
The Burgess Silent Reading Test.....	44	56	50
The Curtis Silent Reading Test:			
Rate.....	193	231	191*
Comprehension.....	89	97.5	95*
The Monroe Silent Reading Test:			
Comprehension.....	31	25.1	22.8

\* Standard score for the sixth grade.

He was later asked to re-read the passages, and he corrected his errors without help. He admitted that he thought they were very easy and that he had not read them carefully. It is evident that he was still considerably retarded in oral reading. Just a week before the end of the period he began to wear glasses and it is believed that his glasses will aid greatly in overcoming his difficulties in recognition.

#### CASE K

A SIXTH-GRADE BOY WHO WAS RETARDED PRIMARILY IN THE MECHANICS OF READING BECAUSE OF EXTREME TIMIDITY AND LACK OF CONFIDENCE

*Introductory statement.*—In October, 1921, W. M. was thirteen years old. He had no physical defects, except nervousness, which were likely to interfere with his progress in reading. He had attended a rural school for several years and subsequently several public schools in Chicago. His background of experience was limited; he lacked confidence in his own ability; and he was extremely timid. Although he was interested in all school activities, and was conscientious and eager to succeed, his record in most of his school subjects was barely satisfactory. The two exceptions were drawing and the manual arts.

*Preliminary diagnosis.*—A preliminary study of the case was made through the use of standardized tests. The names of the tests, W. M.'s scores, and the standard sixth-grade scores are included in Table XXIII.

The scores indicate that W. M. was decidedly below the average in general intelligence and in oral-reading accomplishment. He was also below the standard for his grade in rate of silent reading and in ability to interpret what he read in all tests except the Monroe test.

An examination of his record sheet in oral reading showed that he failed to read the simplest passages accurately. His major errors were (a) repetitions, (b) insertions and omissions of short words or parts of words, (c) minor errors in words, such as *glowed* for *glow*, *bird* for *birds*, and *until* for *till*, (d) substitutions of such words as *pretty* for *beautiful*, and *hills* for *mountains*, which did not change the meaning of the passage, and (e) substitutions of words and phrases, such as *appear to be interested* for *appear to be industrious* and *every morning* for *from morning till night*. These substitutions did not always change the meaning of the particular

TABLE XXIII

Tests	W. M.'s Scores	Standard Sixth-Grade Scores
The Illinois Intelligence Test.....	82	100
The Gray Oral Reading Test.....	21.5	49
The Burgess Silent Reading Test.....	32	50
The Curtis Silent Reading Test:		
Rate.....	153	191
Comprehension.....	71	95
The Monroe Silent Reading Test:		
Comprehension.....	19	18.5

sentence in which they occurred, but were frequently inconsistent with the meaning of the entire passage and showed that he was not directing his attention to the content. In the more difficult passages he was unable to pronounce many polysyllabic words accurately.

A study of his test sheets in silent reading showed that he had difficulty in following directions and in interpreting passages which were problematic in nature and which required careful discrimination in reading or independent thinking. On the other hand, he could answer satisfactorily questions concerning the main points of simple passages.

The preliminary diagnosis showed that he was a very inaccurate oral reader, that he had not established effective habits in the mechanics of reading and that he was weak in interpretation. His difficulties in the mechanics of reading appeared to be more prominent at this stage of the diagnosis than his difficulties in interpretation. A more detailed study of the case was necessary, however, before definite conclusions as to the real cause of his trouble could be reached.



*Detailed diagnosis.*—In the Jones Vocabulary Test he made a score of 92 on the sight list and 94 on the phonetic list. Most of his errors were very slight and the words which he pronounced often differed from the printed words in only one letter as *queer* for *queen* and *bet* for *bit*.

Informal tests in oral reading revealed the following facts: (a) he mispronounced many words in sentences which he recognized correctly in isolation; (b) he often repeated a phrase several times, missing a different word each time; (c) he read haltingly and made many errors which he could correct when his attention was called to them; and (d) he recognized individual words rather than words in groups which indicated that he had a narrow span of recognition. The most significant explanation for most of these errors was his timidity, self-consciousness, and lack of confidence which manifested themselves in most extreme forms at times.

Photographic records of his eye-movements were secured in both oral and silent reading. The average number of fixations per line, the average duration of fixations, and the average number of regressive movements per line appear in Table XXIV.

TABLE XXIV

ITEMS	ORAL READING		SILENT READING	
	W. M.'s Record	Sixth-Grade Standards	W. M.'s Record	Sixth-Grade Standards
Average number of fixations per line	12.4	8.9	11	7.3
Average duration of fixations.....	13.5	7.3	10.9	5.9
Average number of regressive movements per line.....	2.6	1.4	3	1.6

The entries in this table reveal the following significant facts: (a) he made a very much poorer record than the average sixth-grade pupil; (b) his silent-reading habits were very little, if any, differentiated from his oral-reading habits; (c) his span of recognition was narrow, as indicated by the large number of fixations per line; and (c) he recognized words very slowly as shown by the high average duration of fixations. In fact, his eye-movement habits were not as effectively developed as those of an average second-grade child.

Informal tests of interpretation showed that he could reproduce simple passages satisfactorily and could answer thought-provoking questions about them when he was not embarrassed. He became confused in reading selections in which the plot was complicated or the

meaning subtle. When he was given questions to direct his attention to the content, he did noticeably better. Furthermore, he was able to reproduce a greater portion of a passage if he read silently than if he read orally. This was explained by the fact that he was extremely self-conscious when reading aloud and failed to direct his attention to the content.

His failure in the interpretation of more difficult selections was often due to an inadequate meaning vocabulary and to a limited background of experience. Many of the situations described in selections were unfamiliar to him. It was also evident that he had had little experience in reading material of a problematic nature and that he failed to think independently about what he read.

*Summary of diagnosis.*—The diagnosis showed that W. M.'s mental age was two years below his chronological age. He was greatly retarded in oral-reading accomplishment, due to inaccurate recognition of words in groups, to a large number of fixations per line, and to long duration of fixations and frequent regressive movements. His rate of silent reading was much below standard because of difficulties in recognition, a narrow span of recognition, and irregular eye-movements. Although he was somewhat retarded in interpretation the diagnosis showed that his greatest immediate need was training to overcome difficulties in the mechanics of reading. The most significant explanation of his errors in reading was his timidity and lack of confidence.

*Remedial instruction.*—The conclusions reached in the diagnosis led to the adoption of the following aims for the remedial instruction: (a) to secure his confidence and co-operation and to stimulate an interest in improving his ability to read; (b) to increase his mastery of the mechanics of reading including the development of accuracy in the recognition of words, increasing his rate and span of recognition, improving the grouping of words in oral reading and increasing his rate of silent reading; and (c) to develop more effective habits of interpretation. In order to accomplish these results, individual instruction was given for twenty-five minutes each day.

*Developing self-confidence and stimulating an interest in improving his ability to read.*—The first step in the remedial instruction was to assign selections simple enough for him to read with a fair degree of confidence and accuracy. The selections were chosen with care in order to stimulate a keen interest in reading. When he read satisfactorily, he was told that he did well. When he read haltingly and inaccurately, he was given definite suggestions and was asked to re-read. The reading

period was kept as informal as possible and the selections were discussed freely. As a result he became interested in the stories, asked questions, and expressed his own opinion freely. Later he took interest in overcoming his difficulties and attacked one problem after another, such as fluency and accuracy. He also enlisted the co-operation of his mother and read aloud to her each evening.

*Improving his mastery of the mechanics of reading: (a) By using content as an aid in recognition.*—Through the assignment of simple selections, difficulties in interpretation were reduced to a minimum and he was able to center his attention on the mechanics of reading. When a more difficult story was used, he was frequently asked to read it silently first for the content. This enabled him to recognize many words in oral reading which otherwise would have caused him considerable difficulty. If he read passages at sight, a suggestion or question which directed his attention to the content frequently enabled him to read with greater fluency and accuracy.

*(b) By developing more effective habits of eye-movements.*—He read so haltingly at first and repeated so frequently that his reading closely resembled that of one who stutters. This was due primarily to his lack of confidence in recognizing words. Reading a passage silently first often reduced the number of repetitions and enabled him to proceed more rapidly and with greater accuracy. By using very simple selections and by supplying words quickly when he hesitated, he made some improvement. He was then urged to read rapidly, even if he made errors, in order to overcome his tendency to repeat and in order to shorten the duration of fixations. He was frequently asked to read silently as the teacher read aloud in order to establish the habit of seeing words in groups and of making no regressive movements. When he began to repeat in his own reading or to hesitate over the pronunciation of simple words, the teacher occasionally took up the reading at that point and read a few paragraphs to him. As a result he was usually able to proceed with greater fluency and accuracy. A large amount of sight reading of simple selections was frequently assigned in order to establish regular eye-movements.

*(c) By increasing his span of recognition.*—In addition to the training in grouping words effectively, as described above, he was given quick-perception exercises each day to increase his span of recognition. The phrases which caused greatest difficulty in the reading exercises were written on the blackboard and studied, and they were later printed on cards and used in quick-perception drills.

(d) *By developing accuracy in the recognition of words.*—As soon as progress had been made in fluent reading greater emphasis was placed on accurate reading. He encountered little difficulty in the recognition of isolated words but made many errors when they appeared in sentences. He was frequently told that he had made a certain number of errors in a sentence and was asked to re-read in order to correct them. Occasionally, when he met with an unusual number of difficulties, he was asked to re-read the sentence silently, and then aloud. Drill exercises on phrases and short sentences were used to increase his accuracy, as well as his span, of recognition. He confused words which were similar in form such as *come* and *came*, *how* and *now*. These words were used in sentences repeatedly and were finally isolated and printed on cards to be used in short-exposure drills.

A record of the words most frequently mispronounced was kept, which revealed the fact that he repeatedly miscalled words beginning with certain consonant blends such as *sp*, *st*, *sl*, *pr*, and *fl*. Letters combined with *s* were especially difficult for him. When he failed to recognize the word *slip* and called it *ship*, he was given the word *sly* which he knew. A list of words beginning with *sl* was then studied; words containing the *sh* sound were also presented in another list. He was asked to make a record of all words beginning with *sl* and *sh* which he encountered in his reading for the following day and to add them to his list. When he began to read more difficult selections, he needed some help in the pronunciation of polysyllabic words.

*Developing more effective habits of interpretation.*—When he had made satisfactory progress in reading simple material accurately, more emphasis was placed on the interpretation of difficult selections. He was given definite things to look for while reading or was directed by lists of questions to the important points. He was frequently asked to reproduce short selections in order to test his ability to interpret the content and to help him to overcome his timidity and his difficulties in expression. Thought-provoking questions were assigned and he was asked from time to time to read selections of a problematic type in order to establish the habit of thinking independently about what he read.

*Results.*—After eleven weeks of training, he was given the test again. The scores which he made in October before the training began, his December scores, and the standard scores for the sixth grade appear in Table XXV.

The scores indicate that he had made considerable progress in oral reading and in comprehension although he was not yet up to the standard

for his grade except in the Monroe test in which he scored far above the standard. The fact that he scored lower in rate of silent reading in December than in October is difficult to explain inasmuch as the daily reading exercises indicated that he was reading more rapidly than when the training began. The results of the tests show that additional

TABLE XXV

Tests	October Scores	December Scores	Standard Sixth-Grade Scores
The Gray Oral Reading Test.....	21.50	38.50	49
The Burgess Silent Reading Test.....	32	44	50
The Courtis Silent Reading Test:			
Rate.....	153	128	191
Comprehension.....	71	88	95
The Monroe Silent Reading Test:			
Comprehension.....	19	23.2	18.5

training in both oral and silent reading was still necessary to bring him up to the standard for his grade. Near the close of the training period, his classroom teacher reported that he had made noticeable improvement in all content subjects. He had gained in self-confidence, talked more fluently, and volunteered to recite and to express his opinions in class discussions.

## CASE L

A THIRD-GRADE GIRL WHO HAD DIFFICULTIES IN THE MECHANICS OF READING DUE TO IMMATURE LANGUAGE HABITS, FAILURE TO DIRECT ATTENTION TO THE CONTENT, AND LACK OF A FEELING OF RESPONSIBILITY FOR ACCURACY IN READING

*Introductory statement.*—In January, 1922, when the study of this case began, M. P. was nine years old. She lived in an undesirable section of the city, and although poorly dressed she was neat and clean. She was slightly above the standard in weight for her age and was normal physically in most respects. She was left-handed and did not enunciate clearly, having difficulty with the pronunciation of words containing the letters *d*, *r*, *w*, *v*, and *th*. She was noticeably immature and dependent. Her teachers reported that it was difficult to judge her ability accurately owing to her extreme timidity.

*Preliminary diagnosis.*—A preliminary study of the case was made through the use of standardized tests. The names of the tests, M. P.'s scores, and the standard third-grade scores are included in Table XXVI.

The scores indicate that M. P. was somewhat below the average in general mentality. She was a slow, inaccurate oral reader, a rapid silent reader, and was somewhat retarded in interpretation. An examination of her oral-reading record showed that she read the easiest paragraphs slowly, recognizing one word at a time. In the more difficult material she made many errors. She often substituted words which were only slightly different in form from the printed words, but entirely different in meaning, as *small* for *same* and *den* for *pen*.<sup>1</sup> She repeated frequently to correct mispronunciations and to get the right meaning. She partially mispronounced some words and occasionally omitted

TABLE XXVI

Tests	M. P.'s Scores	Standard Third-Grade Scores
The Illinois Intelligence Test.....	99	100
The Gray Oral Reading Test.....	35	46
The Burgess Silent Reading Test.....	38	50
The Courtis Silent Reading Test:		
Rate.....	139	113
Comprehension.....	68	78
The Thorndike-McCall Silent Reading Test.....	36	37.3

words or parts of words. She failed entirely in the pronunciation of many polysyllabic words. She encountered serious difficulty in the accurate enunciation of words containing the letters *r*, *w*, *d*, *th*, and *v*. The most serious difficulty revealed was the fact that she was usually not conscious of her word difficulties. Whenever she encountered words which she did not know she read straight ahead without hesitation, often completing the sentence with words which changed the thought entirely. This tendency to read straight ahead doubtless explains, in part, her relatively high rate of silent reading and the fact that she was unable to answer many of the questions which were asked concerning the content of the oral-reading paragraphs.

The wide variation in her comprehension scores was difficult to explain at first. The low score in the Courtis test was doubtless due to her tendency to go ahead more rapidly than she could recognize meanings. Additional evidence in support of this general conclusion was secured through a careful study of the examination sheet in the Burgess test. In this test she completed seven exercises but did only three of them accurately. Had she completed all of them accurately her score would have been 62. Her high score in the Thorndike-McCall test

was explained by the fact that in this particular case she proceeded rapidly, as was her nature, but happened to complete more exercises accurately than the average pupil of her grade.

The preliminary diagnosis showed clearly that M. P. read aloud slowly and inaccurately, that she read at a relatively high rate silently, and that she was erratic in interpretation. With these facts in mind a more detailed diagnosis of her habits of recognition and interpretation was undertaken.

*Detailed diagnosis.*—She made a percentage score of 91 in Word Recognition Test A. Most of the words which she mispronounced were similar to the corresponding printed words, indicating that she got a general impression of the word but did not see all of the details accurately. She made twelve errors in Word Element Test A. In seven of the twelve cases she was able to pronounce the word when she saw it in a sentence and was able to give other words containing the same phonetic element, although her responses were slow. This indicated a fair mastery of the phonetic elements involved.

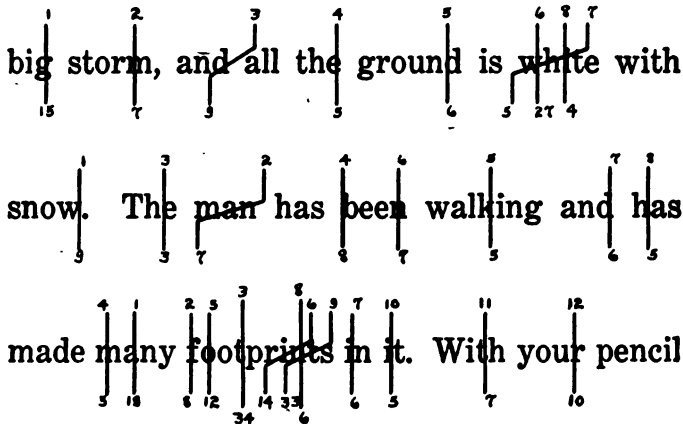
In the short exposure test, she encountered great difficulty in the recognition of isolated letters and three-letter non-sense syllables. Two-, three-, and four-letter words, on the other hand, were recognized with few errors. In general, phrases required several exposures before they were recognized with the exception of certain familiar expressions, such as *who is there*, which were recognized on the first exposure. This test showed clearly that she had a narrow span of accurate recognition and that she had not developed the habit of scrutinizing words with sufficient care.

Records of her eye-movements were secured in both oral and silent reading. A portion of the oral-reading record appears in Plate V.

The first two lines of the record show that her eyes moved regularly from left to right with but few regressive movements. The third line, on the other hand, reveals periods of confusion, one of which is illustrated by the large number of fixations on *footprints*. The necessity of pronouncing the word or words in such cases interfered seriously with the regular, forward movement of her eyes. That she disregarded such difficulties in silent reading was evidenced by the facts that no periods of confusion occurred and that she proceeded more regularly along the lines with few regressive movements. Table XXVII compares the average number of fixations and regressive movements per line and the average duration of fixations in both oral and silent reading with the third-grade standards.

The record shows that she was retarded in the development of effective eye-movement habits, and that her habits of silent reading were somewhat superior to those of oral reading in all three respects. The

PLATE V



fact that she made a relatively large number of fixations per line in both oral and silent reading indicates that her span of recognition was below the average for her grade.

Informal tests of comprehension were given to secure detailed information concerning her habits of interpretation. If the passages used in

TABLE XXVII

ITEMS	ORAL READING		SILENT READING	
	M. P.'s Record	Third-Grade Standards	M. P.'s Record	Third-Grade Standards
Average number of fixations per line	11.6	10.4	9.6	8.9
Average duration of fixations. . . . .	9.1	10.1	7.1	7.9
Average number of regressive movements per line. . . . .	2.4	1.8	1	1.8

these tests were short and simple she was able to reproduce the story quite well, to get the important points, and to execute directions. When longer selections of similar difficulty were used, she frequently gave inaccurate reproductions. She also showed considerable confusion when thought-provoking questions were asked. The explanation for her inaccurate interpretation was found in the fact that she did not recognize



some of the important words accurately. For example, the word *grief* was called *grease*. Such errors in recognition were frequently so significant that she missed the important points. When these mispronunciations were corrected she usually answered questions concerning the content accurately. This indicated that in some cases her failure to comprehend was due to recognition difficulties. In other cases, failure to interpret was due to a limited-meaning vocabulary. In all cases, there was clear evidence of indifference and lack of feeling of responsibility for accurate, thoughtful reading. In connection with these informal tests it became apparent that her speaking vocabulary was distinctly limited and that her language habits were very inaccurate. These facts doubtless accounted, in part, for inaccuracies in recognition. The tests also showed that she was very immature in her habits of thinking and had not formed the habit of thinking independently about what she read.

*Summary of diagnosis.*—The diagnosis led to the conclusion that M. P. was a slow, inaccurate oral reader because (a) she was immature and had not developed a feeling of responsibility for accuracy in reading, (b) she failed to recognize the details of words accurately, (c) she had a narrow span of accurate recognition, (d) she was unable to recognize numerous short, unfamiliar words and most polysyllabic words independently, (e) her speaking vocabulary was limited, and (f) her language habits were inaccurate. She read silently at a relatively high rate because she did not stop to recognize unfamiliar words. Her interpretation of what she read was inaccurate and unsatisfactory due to failure to give adequate attention to the content, to difficulties in recognition, and to immature habits of thinking while reading.

*Remedial instruction.*—A careful study of the results of the diagnosis led to the adoption of the following program of remedial instruction: (a) the stimulation of interest in accurate thoughtful reading and the development of a feeling of personal responsibility for satisfactory results; (b) the development of habits of accurate recognition in both oral and silent reading by holding her responsible for accurate interpretations, by quick-perception exercises calculated to increase her span of accurate recognition, and by exercises to increase her ability to recognize unfamiliar and difficult words independently; and (c) the development of habits of independent thinking and good judgment by assigning thought-provoking questions and problems.

The twenty-five-minute period of instruction which she was given each day was usually divided into three parts: (1) The first few minutes

of the period were spent in informal discussions of outside reading, in reproducing stories, or in reading prepared passages orally. (2) The major portion of the time was devoted to reading simple selections at sight with emphasis on accuracy of recognition, or to reading more difficult material silently with emphasis on accurate interpretations and independent thinking. (3) The remainder of the period was spent in drill exercises to overcome her difficulties in recognition and to increase her span of recognition.

*Developing a feeling of responsibility for careful work.*—Her interest in overcoming careless habits of oral reading was stimulated by providing an audience situation. She was frequently asked to prepare a selection outside of class and to read it aloud to the teacher on the following day. She was told that when she omitted words, changed words, or failed to pronounce them distinctly it was impossible for the listener to understand or enjoy the story. Such a motive usually caused her to read with greater accuracy and clearer enunciation. She frequently failed to interpret the content of a story because she read it carelessly. She substituted words which changed the meaning or failed to direct her attention to the content, and she therefore missed many interesting details. In such cases, the teacher occasionally read the selection aloud, emphasizing the important points. The story was then discussed in order that she might see how much more interesting stories were when careful attention was given to their content. She was encouraged to ask questions when she did not understand passages and to talk freely about selections which interested her. Through these informal talks, an effort was made to correct inaccurate language habits, to enlarge her vocabulary, and to improve her pronunciation and enunciation. As a result, she soon began to assume more responsibility for the improvement of her reading habits.

*Overcoming difficulties in recognition: (a) By developing habits of accurate recognition through directing attention to the content.*—She made many careless errors in recognition because she did not give attention to the content while reading. For example, she made such errors as *plum the fields* for *plow the fields* and *lived near a swam* for *lived near a swamp*. In such cases, she was asked to recall the word which would tell what the farmer did to the fields before he planted the grain, or she was asked, "Does the word *plum* mean anything in this sentence?" Frequent suggestions and questions of this type often prevented errors or led to their correction. She failed occasionally to recognize words in more difficult passages because they were new and unfamiliar to her.

Such words were pronounced for her at the time and their meaning made clear. At the end of the period other sentences containing these words were written on the blackboard. Words which she missed repeatedly were also used in sentences in order that she might make correct associations between them and their meaning.

(b) *By developing independence in the recognition of simple words through the use of phonetics.*—Her failure to recognize details of words was due, in some cases, to the fact that she was not familiar with certain phonetic elements, such as *ar*, *ow*, *bl*, and *pr*. The word which caused difficulty was written on the blackboard, and with it one or two other words containing a common element. She was then asked to name other words belonging to the same class. These words were reviewed and new words were added from time to time until she was able to recognize any words containing a given element. Word endings, such as *ly*, *er*, *ed*, and *ing*, were also given special attention.

(c) *By increasing the span of recognition.*—The reading of words in thought groups was emphasized from the first. The teacher frequently read passages aloud in order to illustrate effective grouping to her. Short phrases printed on cards were used in quick-perception drills. The length and difficulty of the phrases were increased gradually. As her span of recognition increased, her rate of silent reading increased also.

*Developing habits of independent thinking and good judgment.*—Through the use of a variety of selections, her background of experience was broadened, her meaning vocabulary was enlarged, and her interest in reading was stimulated. Through the use of thought-provoking questions she was encouraged to think independently about the content of what she read. She was frequently asked to express her own opinion of a story or to tell what she would do in a given situation. For example, "What would you have done if you had been left in the woods as Mary was?" "How is this story different from the one you read yesterday?" "Which story do you like better?" "Why?"

*Results.*—The period of instruction was continued for nine weeks. She was excluded from school for two weeks of this time because she refused to be vaccinated. At the end of the period she was given the tests again. Her preliminary scores, her final scores, and the standard scores for her grade are included in Table XXVIII.

The scores indicate that she made considerable progress in all phases of reading. She was above the standard for her grade in rate of silent reading and in interpretation. Her score in oral reading

indicates that additional training in the mechanics of reading can be given to advantage.

TABLE XXVIII

Tests	January Scores	March Scores	Standard Third-Grade Scores
The Gray Oral Reading Test.....	35	42.5	46
The Burgess Silent Reading Test.....	38	50	50
The Courtis Silent Reading Test:			
Rate.....	139	164	113
Comprehension.....	68	84	78
The Thorndike-McCall Silent Reading Test.....	36	38	37.3

## CASE M

A THIRD-GRADE GIRL WHO WAS RETARDED IN THE MECHANICS OF READING DUE PRIMARILY TO FAILURE TO CONCENTRATE WHILE READING AND TO EXTREME SELF-CONSCIOUSNESS

*Introductory statement.*—A. R. was eight years old, October 2, 1921, when this study begun. She was the daughter of well-to-do parents who lived in a very attractive part of the city. Her work in the first grade was not entirely satisfactory. Summer work was advised but she failed to take it. Consequently she entered the second grade very much retarded. It did not seem advisable to have her repeat the work of the first grade, hence she struggled through the second grade more or less ineffectively. At the time the study of her case began she was on trial in the III B grade.

While in the first and second grades, she was nervous and restless, scarcely able to sit still, and unable to concentrate on anything for more than a few minutes. She worked very slowly and wasted a great deal of time. She was interested in what other children were doing, but rarely concentrated on her own work. She offered to help other children with their work, but was unable to do her own. By giving her definite things to do, she slowly developed a sense of responsibility and pride in her work.

She wanted to read and used a great deal of energy in trying to learn. Because of her slow progress A. R. had been told (not by her teachers) that she was stupid and that her failure in reading was a disgrace. Being a timid, conscientious child, she was naturally very much embarrassed. When reading in a group, she was painfully self-conscious. This condition was far less evident when she was receiving individual

instruction. Because of her difficulties in reading she had failed to read widely and consequently had not developed fluent reading habits.

Early in the second grade, her inability to spell had attracted attention. On account of the numerous errors which were made, it was concluded that she did not see well. Glasses were provided and improvement in reading had been quite rapid from that time. Nevertheless in October, 1921, she encountered so many reading difficulties that diagnostic and remedial work was recommended.

*Preliminary diagnosis.*—Table XXIX contains the names of the tests which were used in the preliminary diagnosis, the scores which A. R. made, and the standard third-grade scores.

TABLE XXIX

Tests	A. R.'s Scores	Standard Third-Grade Scores
The Stanford Revision of the Binet-Simon Tests.....	124	100
The Gray Oral Reading Test.....	41.25	46
The Burgess Silent Reading Test.....	26	50
The Courtis Silent Reading Test, No. 2:		
Rate.....	39	113
Comprehension.....	100	78

The results of the tests showed that she was above the average for her grade in general mental ability, that she was retarded in oral-reading accomplishment and rate of silent reading, and that she was above the average in interpretation in the Courtis test and below in the Burgess test. Failure in the Burgess test was doubtless due to her slow rate of silent reading. An examination of her oral-reading record showed that she read at an unusually slow rate and did not group her words effectively. In the second place, she made frequent errors such as repetitions to correct mispronunciations, and she miscalled parts of words, such as *even* for *ever*, and *ready* for *reared*. Frequently errors occurred which were the result of filling in the thought without recognizing the words accurately, such as *he was full of mischief*, instead of *he was full of business*. Her slow rate of reading seemed to be due to care and deliberateness and to inaccurate habits of recognition. In the more detailed diagnosis of her case, special attention was given to her difficulties in recognition.

*Detailed diagnosis.*—In the Jones' Vocabulary Test, she made a score of 69.5 on the phonetic list and a score of 86 on the sight list. These scores indicated decided weaknesses in the recognition of simple

words. Because she scored low on the phonetic list, Word Element Test A was given. Her responses indicated that she was able to recognize simple phonetic elements and to give other words containing the same sounds. She did this, however, only with considerable difficulty, which may correlate with the fact that she was a monotone in music. Informal tests which were given later showed that she had not thoroughly learned the sounds of some of the initial consonants. Furthermore, similar words frequently caused difficulty, such as *then* and *when*, *was* and *saw*, *have* and *had*.

The results of the short-exposure tests are given in Table XXX.

TABLE XXX

Recognition Series	Number of Items in Each Series	Number of Errors in Each Series
Isolated letters.....	26	9
Two letter non-sense syllables.....	10	9
Three letter non-sense syllables.....	10	39
Two letter words.....	10	1
Three letter words.....	10	5
Four letter words.....	10	22
Two word phrases.....	10	14
Three word phrases.....	10	22

The table reveals the following significant facts: (a) A. R. encountered a large amount of difficulty in the recognition of isolated letters and non-sense syllables. (b) She had more difficulty with longer words than with shorter ones. A large percentage of her errors was due to the fact that the exposures was too brief for her to recognize words accurately. In many instances she was able to recognize words without errors when the duration of the exposures was increased slightly. (c) Her span of recognition was very narrow as shown by her difficulty in recognizing phrases containing two or three words.

Photographic records of her eye-movements in oral and silent reading were secured. The essential facts which were revealed are expressed in numerical terms in Table XXXI.

A study of this facts presented in this table shows that although she was noticeably retarded in both oral and silent reading her eye-movement habits were relatively less efficient in the former than in the latter. The demands of pronunciation in oral reading apparently caused serious difficulty and resulted in more fixations per line and a larger number of regressive movements. The fact that she made more fixations per line

than is normally expected of third-grade pupils indicates that her span of recognition was relatively narrow.

After several informal tests of comprehension had been given, it was found that when the words had been recognized she reproduced what she read very well, answered questions intelligently, and followed directions accurately. Whenever failure occurred in the interpretation

TABLE XXXI

ITEMS	ORAL READING		SILENT READING	
	A. R.'s Record	Third-Grade Standards	A. R.'s Record	Third-Grade Standards
Average number of fixations per line	16.5	10.4	10.	8.9
Average duration of fixations.....	10	10.1	10.7	7.9
Average number of regressive movements per line.....	3.3	1.8	1.8	1.8

of simple passages it was usually found that there had been difficulties in the recognition of some of the words. It was concluded, therefore, that A. R.'s major difficulties were in recognition rather than in interpretation.

*Summary of diagnosis.*—The preliminary diagnosis showed that A. R. was above the average for her grade in general mental ability, that she was approximately normal in interpretation, and that she was retarded in oral-reading accomplishment and in rate of silent reading. The detailed diagnosis showed that her major difficulties were in recognition rather than in interpretation. The nature of her difficulties in recognition may be described in the following terms: (a) inability to recognize words as quickly as other pupils of her grade; (b) difficulty in the accurate recognition of some of the initial consonants; (c) a tendency to confuse words which were similar, such as *when* and *then*; and (d) a narrow span of recognition. The information secured in the diagnosis led to the conclusion that difficulties in the mechanics of reading were due to failure to concentrate while reading and to extreme self-consciousness. The fact that she had had trouble with her eyes was doubtless a factor in her retardation. Although oculists declared that her lenses were appropriate for her, she persisted in rubbing her eyes frequently thus indicating some form of irritation or strain.

*Remedial instruction.*—In order to secure improvement as rapidly and as effectively as possible, remedial instruction was organized to accomplish the following purposes: (a) to secure her confidence and

co-operation and to stimulate a genuine interest in the reading of many simple selections and stories; (b) to develop an adequate mastery of the mechanics of reading, including independence in word recognition, a wider span of recognition, and a more fluent rate of reading; and (c) to develop a more thoughtful reading attitude, keener interpretation, and the habit of thinking independently about what she read.

Inasmuch as A. R. was very timid, shy, and self-conscious, the first step of the remedial teacher was to become thoroughly acquainted with her in order that she might feel at ease and free from embarrassment during the instruction periods. This was accomplished largely through discussions about her play activities and the things going on in the classroom. It was difficult, at first, to develop any form of spontaneous oral expression. She responded in a very low tone of voice and in as few words as possible. Gradually, however, she began to feel at ease and appeared to enjoy the period. Her attitude was very good at all times, because she realized that she could not read as well as her classmates and because she was very anxious to improve. The fact that the instruction which was given was entirely individual proved to be distinctly advantageous inasmuch as she was thus freed from the self-consciousness and inhibitions which accompanied group work. Improvement was noticed in the results of individual instruction some time before it was apparent in the classroom.

On account of the difficulties which she encountered in the mechanics of reading approximately one-half of the period was given to drill exercises to develop independence in word recognition, a wider span of recognition, more effective grouping of words in oral reading, and a more rapid rate of silent reading. The remainder of the period was devoted to reading for content. Inasmuch as there was nothing new or unique in the method of conducting these exercises no further comments are necessary. The more significant features of the drill exercises will be described at greater length.

In testing her ability to recognize phonetic words and in providing effective drill exercises a set of three hundred and twenty phonic cards were used. A record was kept of the time required to name all of the words. Those which caused difficulty were noted and used later in drill exercises. At the beginning of a practice period it was suggested that she try to reduce the time required to read the set. In October the time recorded was 18 minutes and 15 seconds and in November it was 9 minutes and 39 seconds. During the month, she had practically doubled her rate of recognition. Even after this improvement had taken



place she still made many errors on words which were similar in form, such as *this* and *that* and *then* and *them*. Appropriate drill was supplied through the use of sets of cards which presented these words separately and in sentences. Similar drills were also conducted for additional words which caused difficulty in the reading exercises. By means of repeated daily drills and by calling her attention to errors, she soon learned to recognize the details of words more accurately.

Devices were employed at frequent intervals to increase her span of recognition. First, typewritten sheets of stories were assigned in which the material was separated into natural thought units by special spacings as described in chapter iii. A large amount of time was given to these exercises inasmuch as A. R. was clearly a word-reader and these exercises emphasized larger units. She profited considerably by this work, as evidenced by more effective grouping of words in oral reading and increased rate of silent reading. In the second place, cards having increasingly long phrases and sentences were used to develop her span of recognition. Progress was noted as a result of these exercises although she gave evidence at times of having lost all that she had gained previously.

To aid in developing the habit of reading for meaning, cards were prepared which contained directions for actions to be performed as, "Tell me how warm the air is in the room at present." "Draw a picture of a tennis net on the board and then draw a ball just passing over the net." Other cards called for oral responses to such questions as "How old will you be five years from now?" "What things in this room are made of wood." Because of the rapidity with which these exercises could be done she enjoyed them and consequently took more interest in the work.

As progress was made in the exercises described, she gradually developed a keener appreciation of the stories she read. This was accomplished through spirited discussions and by gradually imposing more and more responsibility upon her for mastering the content. She read the *Nixie Bunny* books and enjoyed them keenly. She also frequently anticipated the events as described in succeeding parts of the story. These facts showed clearly that she was enjoying the story and gaining in power to secure the thought of what she read.

*Results.*—The results of the remedial instruction are recorded in Table XXXII which compares her October and March scores.

The March scores show decided improvement. Much of this occurred during the last few weeks of the training period. It remains

to be seen whether this was one of her so-called "spurts" and will be followed by another "lapse," or whether it was a permanent gain. All

TABLE XXXII

Tests	October Scores	March Scores	Standard Third-Grade Scores
The Gray Oral Reading Test.....	41.25	51.25	46
The Burgess Silent Reading Test.....	26	56	50
The Curtis Silent Reading Test, No. 2: Rate.....	39	140	113
Comprehension.....	100	100	78

indications are that she has finally made the reading adaptation and because of her joy in her accomplishment will continue to increase in ability to read effectively.

## CASE N

A FOURTH-GRADE BOY WHO WAS GREATLY RETARDED IN THE MECHANICS OF READING DUE LARGELY TO LACK OF INTEREST IN READING AND TO FAILURE TO READ SUFFICIENTLY TO ESTABLISH FUNDAMENTAL HABITS AND ASSOCIATIONS

*Introductory statement.*—W. C. was ten years and one month old in October, 1921, when the investigation began. His parents, who are Swedish, were in comfortable circumstances and lived in a good residence neighborhood. They were interested in his progress in school because they were ambitious for him to succeed in business. They had supplied him from time to time with numerous books and a small electrical laboratory.

He entered the first grade at the age of five, which he attended for more than a year. His progress in the second and third grades was normal. In the autumn of 1921, he entered the University Elementary School and was required to repeat the work of the fourth grade because of difficulties in reading. Until shortly before entering this school he had done little or no reading on his own initiative. During the summer of 1921, a playmate interested him in some stories which he was reading, and W. C.'s parents reported that he did considerable independent reading before entering school in October.

*Preliminary diagnosis.*—The first step in the diagnosis was to determine his general intelligence and his accomplishments in oral and silent reading. Table XXXIII includes the names of the tests which were used, the scores which W. C. made, and the standard fourth-grade scores.

The results of the intelligence test indicated that W. C. ranked distinctly above the average in general mental ability, and that any serious defect in reading should probably not be attributed to low native intelligence. His oral-reading score was at least two years below the standard for his grade. His reading was characterized by frequent repetitions, partial mispronunciations, and the substitution of one word for another. In the more difficult passages of the test he pronounced accurately some of the difficult words, such as *embraced*, *evident*, *contrast*, and *possession*, but encountered serious difficulties with many polysyllabic words, and mispronounced numerous simple, familiar words. Questions based on the passages of the test showed clearly that

TABLE XXXIII

Tests	W. C.'s Scores	Standard Fourth-Grade Scores
The Stanford Revision of the Binet-Simon Tests.....	119	100
The Gray Oral Reading Test.....	33.75	47
The Burgess Silent Reading Test.....	46	50
The Curtis Silent Reading Test, No. 2:		
Rate.....	118	145
Comprehension.....	96	89
The Monroe Silent Reading Test:		
Comprehension.....	5	12.7

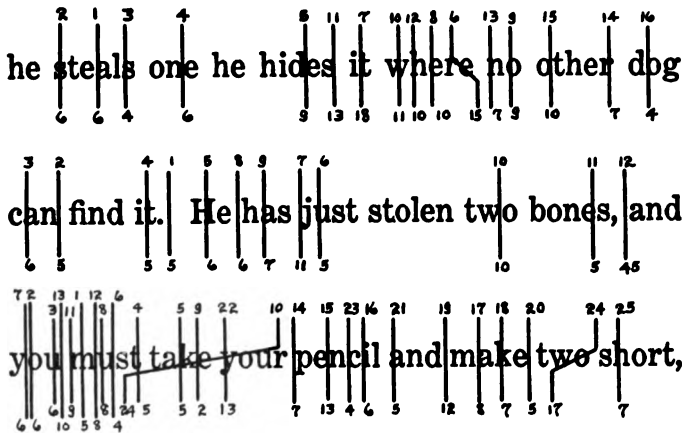
he was noticeably stronger in grasping the essential points of simple material than of difficult passages; also that he encountered genuine difficulty in remembering details and in answering thought-provoking questions about passages which contained words that he could not pronounce. Furthermore, his rate of reading, even of the simplest passages, was unusually slow due to the fact that he recognized words individually rather than in thought units.

The results of the silent-reading tests revealed three very interesting facts: (a) that his rate of reading was below the standard for his grade; (b) that he interpreted simple passages satisfactorily as shown by his comprehension score in the Curtis test; and (c) that he encountered difficulties in the interpretation of exercises of increasing difficulty as shown in the Monroe test. Informal tests which were given later supplied additional evidence of this difference between his interpretation of simple and more difficult passages. They also showed clearly that as difficulties in recognition increased, his difficulties in interpretation were multiplied. Inasmuch as he scored very low in both oral reading and rate of silent reading, and encountered more and more difficulties

in interpretation as difficulties in recognition increased, the tentative conclusion was drawn that his major weakness was in recognition rather than interpretation.

*Detailed diagnosis.*—Additional methods were used to secure more detailed information concerning his difficulties in recognition. In the Jones Vocabulary Test he made a percentage score of 93. The errors which he made showed frequent failure to recognize the details of words accurately. For example, the word *tick* was given for *trick*, *fog* for *frog*, *book* for *brooks* and *skin* for *skip*. A letter-marking test was given to determine how accurately he saw the details of a line of print. In the first test, he made an accuracy score of 78. On the following day, he was given a similar test with instructions to work

PLATE VI



slowly and accurately. Under these conditions all the *a*'s were marked. When he was asked to work more rapidly he began to make errors. These tests indicated that he saw the details of words accurately if given sufficient time, but that he did not see all the details if he was required to work rapidly. The short-exposure tests which were given along with the letter-marking tests contributed two additional facts concerning his recognition habits: (*a*) although he recognized individual words accurately, he frequently mispronounced the same words when they appeared in a sentence; and (*b*) he had a narrow span of recognition.

Photographic records of his eye-movements in both oral and silent reading were secured. A reproduction of his oral-reading record appears in Plate VI.

The most significant facts which were revealed by the record were (a) the large number of fixations per line, (b) the inaccuracy of the return sweep from the end of one line to the beginning of the next as indicated by the location of the first fixation in most of the lines, and (c) the irregularity of the eye-movements as shown by the large number of regressive movements. The extent of his deficiencies in eye-movements are expressed in numerical terms in Table XXXIV.

TABLE XXXIV

ITEMS	ORAL READING		SILENT READING	
	W. C.'s Record	Fourth-Grade Standards	W. C.'s Record	Fourth-Grade Standards
Average number of fixations per line	14.2	10.3	9.4	7.3
Average duration of fixations.....	9	7.7	7.8	6.7
Average number of regressive movements per line.....	3.8	2	3.4	1.4

The entries in this table show clearly that he had less well developed habits of recognition in both oral and silent reading than average fourth-grade pupils. The records for silent reading are distinctly better than those for oral reading which indicated the use of somewhat different habits in the latter as compared with the former. The number of regressive movements in both types of reading was excessive and suggested serious irregularities in his eye-movement habits.

*Summary of diagnosis.*—The diagnosis justified the conclusion that W. C. was more or less retarded in most phases of reading and that his difficulties were more pronounced in oral reading and rate of silent reading than in interpretation. An analysis of his habits of recognition showed that he had a narrow span of recognition, that he was noticeably less accurate when reading rapidly than when reading slowly, that his return sweep from the end of one line to the beginning of the next was inaccurate, and that his reading, both oral and silent, was accompanied by a greater number of regressive movements, more fixations per line, and longer fixations than characterize an average fourth-grade pupil. In fact, his mastery of the mechanics of reading was similar to that of a second-grade child, with the exception that he was able to pronounce a limited number of somewhat difficult words. In the interpretation of what he read he was noticeably stronger in grasping the essential points of simple material than in grasping the details and in answering thought-provoking questions about difficult passages containing words which

he could not pronounce. Inasmuch as he had never read more than the minimum amount which was required and revealed the characteristics of a reader in the second grade, it was concluded that his retardation in reading was due largely to lack of interest and experience in reading. This conclusion was further supported by the facts that no physical or mental defects could be found which would interfere seriously with his progress in reading and that he was distinctly superior in general mental ability to a fourth-grade pupil of average standing.

*Remedial instruction.*—With the facts which were described in the diagnosis clearly in mind, it was concluded that remedial instruction should aim (a) to interest W. C. in reading a large number of simple, interesting selections and books, (b) to increase his mastery of the mechanics of reading, which include developing an accurate return sweep, increasing his span of recognition, developing fluent habits of silent reading, and increasing his power of recognizing words independently, and (c) to improve his power of interpretation, particularly in more difficult types of material.

*Interest.*—An attempt was made, first of all, to discover W. C.'s chief interests and activities, both in and out of school. When asked about his school work he expressed enthusiasm for the work in science. It was discovered that he was also interested just at that time in fairy stories. Before the remedial instruction had proceeded far he was carrying a book of fairy stories around with him most of the time. His interest in these stories was used in getting him to read a sufficient amount to form fluent habits of reading. Furthermore, the reading-room teacher co-operated by directing his attention to the better class of fairy stories. At least two hours each day were spent in outside reading of interesting stories and books. The increasing rapidity with which he read stories was evidence of the value of such reading in establishing fluent habits.

When asked about his home activities he described in some detail an electric motor, a transformer, and other electrical and mechanical devices which he had in his small laboratory. When given an opportunity to read selections relating to the story of electricity it was found that his reading rate was retarded very decidedly because of difficulties in recognition. Inasmuch as simple accounts of electricity could not be found, much of his time was devoted at first to reading material of the fairy-story type. Later when he had gained more control of the mechanics of reading he gave a great deal of time and attention to the reading of more technical types of subject-matter.

*Mastery of mechanics.*—Approximately ten minutes were used each day in various exercises to increase his mastery of the mechanics of reading. His attention was called first to the fact that his eyes did not make the return sweep accurately. Very simple selections were chosen for drill exercises and he was instructed to try to make the return sweep to the beginning of each line without error. After a few days of conscious effort marked improvement was noted. The fact that the selections used in this connection were very simple facilitated the development of accurate habits.

Flash-card exercises were introduced early to increase his span of recognition. Sets of cards were prepared for this purpose. The first set was composed of short words, such as *an*, and each additional set included words or phrases of increasing length. Records were kept of the number of exposures required to recognize words correctly. As soon as all the exercises of a given set had been recognized without error the next set was begun. Interest was maintained by urging him to complete a set successfully each day. These exercises also aided in increasing his rate of reading. In addition he was frequently given timed reading exercises or he was asked to see how far he could read in a given amount of time. In all such exercises he was held responsible for the content of what he read.

Three devices were employed to improve his ability to recognize and pronounce words in thought units. In the first place, he was asked to read typewritten paragraphs in which the subject-matter was divided into natural groups by elaborate spacings. This device was calculated to emphasize such units visually. In the second place, the teacher read to him, giving special attention to effective grouping. This device emphasized thought units audibly. In the third place, he was asked to read silently for the purpose of selecting thought units, and then to read the selection orally for practice in grouping words effectively. Whenever occasion demanded, his attention was called to errors and the passage was read to him. After devoting five minutes daily to such exercises for two weeks, very satisfactory improvement was noted.

Two methods were employed in improving his ability to recognize words. In the first place, a list was made of the simple words which were mispronounced during the reading exercises and drill cards were prepared containing words similar in form, such as *this*, *that*, *these*, and *those*. Progress was also secured by insisting upon the accurate reading of simple material, and through the reading of prepared exercises containing words which were frequently mispronounced. In the second place,

phonetic exercises and practice in the syllabication of longer words were introduced to overcome difficulties in the pronunciation of unfamiliar words.

*Interpretation.*—Various devices were employed for improving his power of interpretation. In connection with much of the reading of simple passages, W. C. was frequently asked to answer questions based on the content. At times he was asked to read for the purpose of finding answers to specific questions. At other times he was asked to reproduce the main points of a story or the details.

In order to study his progress in rate and comprehension in silent reading, short simple stories were pasted on cards and questions based on the content were prepared. He was asked to read the story and to answer the questions. The time required for the reading of these stories was frequently recorded. Inasmuch as the number of words contained in the story was known, a record of the boy's rate of reading was secured. To afford variety in this work, passages of from 50 to 75 words in length were selected and pasted upon cards. An illustration follows:

Every week\* the children\* scrub their wooden shoes\* with soap and water\* until they are almost as white as snow;\* then they dry them in the sun,\* or before the fire\* in the big open fireplace.\*

These wooden shoes\* make fine boats,\* and sometimes\* the boys take them off\* and sail them in the canals.\* The little girls\* use them for doll carriages,\* or play they are beds,\* and tuck their dolls into them\* for a nap.\*

The number of distinct thought units as indicated by asterisks in the illustration were counted. W. C. was then asked to read a selection and to reproduce what he had read. Records were kept of the number of thought units reproduced, as four out of ten, or six out of eight, and the boy's progress toward complete reproduction was noted and shown to him. Long stories which continued the same thread of thought for several successive days were also read and discussed in detail. One which he seemed to enjoy most was Hulbert's "Forest Neighbors."

*Results.*—The results of the remedial instruction are shown in Table XXXV, which contains the scores made at the beginning and at the close of the period of training, and the fourth-grade standards.

The scores show clearly that marked progress was made in all phases of reading which were measured by the tests. Furthermore, the pupil was above the standard for his grade in rate of silent reading and in interpretation. He was still deficient in the mastery of the mechanics of reading as measured by the oral-reading test. Inasmuch



as he had improved so notably in the interpretation of what he read and was making very rapid progress in oral-reading accomplishment, remedial instruction was discontinued.

TABLE XXXV

Tests	October Scores	December Scores	Standard Fourth-Grade Scores
The Gray Oral Reading Test.....	33.75	40	47
The Burgess Silent Reading Test.....	46	57	50
The Courtis Silent Reading Test, No. 2:			
Rate.....	118	162	145
Comprehension.....	96	100	89
The Monroe Silent Reading Test:			
Comprehension.....	5	10	12.7

On March 6 and 7, 1922, check tests were given to determine if the improvement noted in the December tests had proved permanent. The results are presented in Table XXXVI.

TABLE XXXVI

Tests	March Scores
The Gray Oral Reading Test.....	60
The Burgess Silent Reading Test.....	56
The Courtis Silent Reading Test, No. 2:	
Rate.....	156
Comprehension.....	100
The Monroe Silent Reading Test:	
Comprehension.....	11

The final scores give clear evidence of the fact that the improvement in oral reading noted in December was not only permanent, but in addition had materially increased. In silent reading the scores were essentially the same as the December scores.

## SUMMARY OF CAUSES

The five cases which have been reported reveal a large number of significant causes of difficulty or failure in the mechanics of reading. (1) Defective vision usually results in difficulties in recognition. (2) Immature language habits result in inaccuracies which are not characteristic of the reading of pupils who have fluent command of simple English sentences. (3) Self-consciousness and timidity are usually accompanied by lack of confidence, uncertainty, and inaccuracies. (4) Lack of

interest in reading results in failure to apply one's self effectively. (5) A very limited experience in reading results in failure to establish fundamental habits of association. (6) Carelessness and lack of feeling of responsibility are serious handicaps because they are accompanied by numerous errors. (7) Failure to direct attention to the content while reading results in many errors which could be avoided if the content of a passage were clearly in mind; it also deprives the reader of the aid in recognition which comes from anticipating what follows. (8) Difficulty or inability to associate the pronunciation of words and parts of words with their symbols results in inability to recognize and pronounce words independently and accurately. (9) A narrow span of recognition retards the rate of reading and results in failure to recognize and express words in thought groups. (10) Irregular eye-movements seriously interrupt recognition and result in the dissipation of effort.

#### CONCLUSIONS CONCERNING REMEDIAL INSTRUCTION

The reports of remedial instruction which have been presented in this chapter contain more differences than similarities in the methods and devices which were employed. This is due to the fact that each case presented a large number of individual problems. An analysis of the reports reveals several important suggestions concerning remedial instruction which are applicable to practically all pupils who encounter serious difficulties in the mechanics of reading. They may be summarized as follows: (1) The training material which is used for a given child must be simple enough for him to read with a fair degree of success. If the material used is too difficult he will be discouraged and unwilling to make the necessary effort to overcome his weaknesses. (2) In all reading exercises the pupil's attention must be directed primarily to the content in order to avoid the danger of developing a word-reader. (3) Numerous drill exercises must be provided to overcome specific difficulties, such as inaccurate recognition of words or parts of words, a narrow span of recognition, irregular eye-movements, and inaccurate return sweeps. These exercises should be given during drill periods and should not be combined with content reading. (4) As soon as progress is noted in overcoming a specific difficulty, numerous opportunities should be provided for the pupil to incorporate his improved habits into all of his reading activities. In this connection frequent sight oral-reading lessons, numerous silent-reading exercises, and a large amount of simple interesting supplementary reading material are valuable.

## CHAPTER VII

### PUPILS WHO ENCOUNTERED DIFFICULTIES IN RATE OF SILENT READING

Recent classroom investigations have revealed the fact that pupils read at widely different rates. The good reader frequently reads as many as eight or ten words per second. On the other hand, pupils are found in the same class who read not more than two words per second. Because of the great difference in the efficiency of good and poor readers much attention has been given recently to the problem of increasing the rate of silent reading.

Ability to read rapidly is a good measure of the mastery which a reader has of the printed page. In the first place, rapid readers usually understand what they read more effectively than do slow readers. There are notable exceptions to this general rule, however. In the second place, the slow reader is unable to pass readily from the printed symbol to the meaning. The "mere mechanical processes are obstacles and he loses time in trying to perform the preliminary mental acts which are necessary before he can comprehend the passage. In the case of the good reader, on the other hand, the mechanics of the process are fluent and rapid. The proficient reader has mastered the words and moves on without hesitation to the meaning."<sup>1</sup>

In a detailed discussion of types of readers, the difficulties encountered by pupils who read slowly should be emphasized. In the investigations which are reported in this monograph only a very small number of pupils were studied who were retarded primarily in rate of silent reading. This was due to the fact that the first group of pupils was selected because of difficulties in the mechanics of oral reading and the second group was selected because the pupils were retarded primarily in interpretation. If time had permitted pupils would have been studied whose most significant weaknesses were in rate of silent reading. Because no clear-cut rate cases were found among the pupils studied the reports of three pupils who encountered difficulty in rate, as well as in other phases, of reading are reported in this chapter to illustrate some of the problems which arise in training pupils who read at inappropriate rates.

<sup>1</sup> Charles H. Judd, *Measuring the Work of the Public Schools*, 1916, p. 127.

The first report describes the case of A. N. who was poor in oral reading, slow in silent reading, and unsatisfactory in interpretation. Her case emphasizes the fact that a broad program of remedial instruction is necessary when a pupil is weak in rate as well as in other phases of reading. The second case, A. M., is somewhat similar to the first. The fact that his rate of reading did not increase materially as a result of remedial instruction emphasizes the fact that a larger amount of training to increase the rate of reading is required in some cases than in others. The third case, E. A., is distinctly different from the first two. Her original difficulty was that she read too rapidly neglecting details both in the recognition of words and in the interpretation of meaning. In order to overcome this difficulty it was necessary to hold her responsible first of all for the details of what she read. This resulted in greatly reducing her rate of reading. It was then necessary to introduce a series of exercises to increase her rate of accurate reading.

#### CASE O

A FOURTH-GRADE GIRL WHO WAS POOR IN ORAL READING, SLOW IN RATE OF SILENT READING, AND UNSATISFACTORY IN INTERPRETATION, PRIMARILY BECAUSE OF POOR ATTENTION WHILE READING AND POOR HABITS OF THINKING

*Introductory statement.*—A. N. was nine years and ten months old in October, 1921. She came from a very comfortable home where conditions were quite favorable to satisfactory development along all lines. Her progress in the first three grades had been normal. She had done very good work in the fundamentals of arithmetic and spelling, but had encountered difficulties in reading. When she applied for admission to the University Elementary School in the spring of 1921, her application was refused until she had made up her deficiency in reading. Through the assistance of a tutor she made considerable progress during the summer. Soon after she was admitted to the Elementary School in October, it was found that she still encountered numerous difficulties in reading and was in need of remedial instruction. Furthermore, it was learned that she was erratic, talked a great deal, and was "flighty."

*Preliminary diagnosis.*—Five tests were used in the preliminary diagnosis of the case. The names of the tests, the scores which A. N. made, and the standard fourth-grade scores appear in Table XXXVII.

The tests indicated that A. N. was a girl of approximately normal intelligence, that she was retarded about two years in oral-reading accomplishment, that she read silently at a very slow rate, that she

interpreted the passages of the Courtis Silent Reading Test with a fair degree of accuracy, and that she was noticeably weak in the interpretation of more difficult exercises as shown by her score in the Monroe test. The results of these tests led to the tentative conclusion that she was greatly retarded in the mechanics of reading and in the interpretation of passages which required good thinking.

TABLE XXXVII

Tests	A. N.'s Scores	Standard Fourth-Grade Scores
The Stanford Revision of the Binet-Simon Tests.....	97	100
The Gray Oral Reading Test.....	37.5	47
The Burgess Silent Reading Test.....	26	50
The Courtis Silent Reading Test, No. 2:		
Rate.....	90	145
Comprehension.....	90	89
The Monroe Silent Reading Test:		
Comprehension.....	3	12.7

An analysis of her oral-reading record showed that she made errors of the following types: (a) innumerable repetitions to correct wrong pronunciations, such as *the nest was for the next has*; (b) frequent substitutions, such as *a for the*; (c) numerous omissions and insertions, particularly the insertion of conjunctions and prepositions; (d) many minor mispronunciations, such as *black for lack*, *stripped for striped* and *shrill for sharp*; and (e) an unusual number of gross mispronunciations of such words as *scarcely*, *reared*, *reason*, *behind*, and other more difficult words. The number and character of her errors in recognition were sufficient to explain her low oral-reading score and her unsatisfactory rate of silent reading. They did not explain fully, however, her difficulties in comprehension. Accordingly, a more detailed study was made of her habits of recognition and interpretation.

*Detailed diagnosis.*—The Jones Vocabulary Test was given to determine her ability to recognize first-grade words accurately. She made a score of 90.6 on the sight list and a score of 90.7 on the phonetic list, which indicated a relatively high percentage of inaccuracies for a fourth-grade pupil in the recognition of simple words. These errors involved in most cases the substitution of one letter for another. In the visual memory test she made errors in two of the twenty exercises, which was a smaller number than had been made by very good readers of the same grade. It did not seem, therefore, that her failures in recogni-

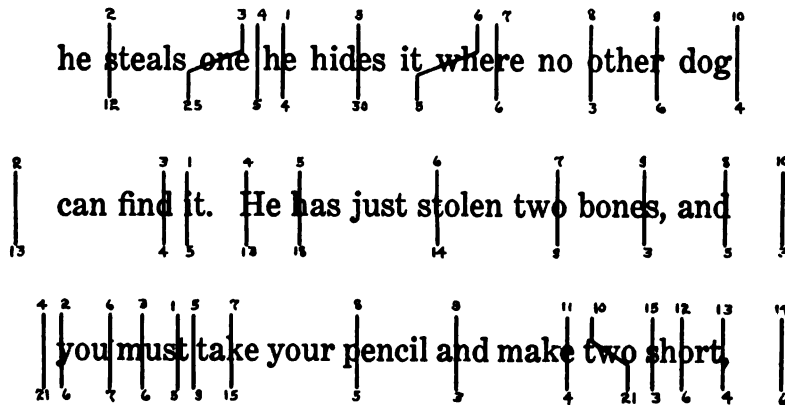
tion should be attributed to poor visual memory. Short-exposure exercises were also given and the number of errors which we made in each exercise is recorded in Table XXXVIII.

TABLE XXXVIII

Recognition Series	Number of Items in Each Series	Number of Errors in Each Series
Isolated letters.....	26	13
Two-letter words.....	18	13
Two-letter non-sense syllables.....	10	6
Three-letter words.....	10	0
Four-letter words.....	10	4
Two-word phrases.....	10	14
Three-word sentences.....	10	31

The entries in this table indicate that isolated letters and non-sense syllables caused considerable difficulty, that two-, three-, and four-letter words were recognized with few errors, and that phrases were recognized only after a large number of exposures. These facts show clearly that she had a narrow span of recognition and frequently failed to recognize isolated words accurately.

PLATE VII



Photograph records of her eye-movements were secured to determine additional facts concerning her habits of recognition. A section of her oral-reading record is reproduced in Plate VII.

Four significant characteristics of her eye-movements are revealed: (a) she made a large number of fixations per line; (b) fixations occurred

both to the right and to the left of the printed lines; (c) the return sweep was inaccurate as shown by the location of the first fixation in each line; and (d) there were frequent irregularities in the forward movement of the eyes from left to right as shown by the regressive movements. The extent of some of her deficiencies are expressed in numerical terms in Table XXXIX.

TABLE XXXIX

ITEMS	ORAL READING		SILENT READING	
	A. N.'s Record	Fourth-Grade Standards	A. N.'s Record	Fourth-Grade Standards
Average number of fixations per line	12.8	10.3	12	7.3
Average duration of fixations.....	9.6	7.7	6.7	6.7
Average number of regressive movements per line.....	3.2	2	3.6	1.4

A comparison of A. N.'s record with the standards shows that she was far less efficient than the average pupil of her grade. In fact, her record did not compare favorably with that of an average second-grade pupil, except in the case of the duration of fixations. Furthermore, her eye-movements were quite similar in oral and silent reading with the exception that the duration of fixations was shorter in silent reading than in oral reading. All these facts showed clearly that she was an immature reader who encountered serious difficulties in recognition and had not adopted habits of silent reading which were different from those of oral reading.

Careful observation during informal tests of oral reading revealed additional significant facts. It was very difficult for her to keep her attention centered on the printed lines while reading. Without apparent cause her eyes frequently left the line to look at illustrations or out of the window, resulting in serious interruptions in her reading. Furthermore, she read slowly, recognizing one word at a time. On re-reading she proceeded more rapidly but did not group her words effectively. It was also observed that her power of word analysis was only fairly well developed. She hesitated over words which she could recognize if given sufficient time, thus indicating that recognition did not take place quickly. Finally, questions which were asked revealed the fact that she did not follow the content consistently. Whenever the thought had been mastered her reading was far more effective.

In informal tests of interpretation it became very clear that she failed to direct her attention to the content and to keep the important points clearly in mind. Frequently after reading, it was discovered that she had given no attention to the content whatsoever. At other times, questions failed to secure more than the briefest answers. When questions which required good thinking, the weighing of values, and sound judgment were asked, it was found that she had not developed habits of effective thinking. Unless problems were definitely set or unless she knew that a reproduction or answers to questions would be required, she got very little from her reading.

*Summary of diagnosis.*—The preliminary diagnosis revealed the case of a girl who was a very inaccurate oral reader, who read at an unusually slow rate silently, who interpreted simple materials satisfactorily, and who understood more difficult passages inadequately. The study of her reading habits showed clearly that her weaknesses in oral reading and her slow rate of silent reading were due to inaccurate recognition, to a narrow span of recognition, to inaccurate return sweeps, to irregular movements of the eyes along the lines, and to failure to direct her attention to the content while reading. These habits were due, in part at least, to poor habits resulting from lack of interest and inattention. These same characteristics also explained frequent ineffective interpretations of simple passages. In the case of more difficult passages, failure was attributed to inattention, to poor habits of thinking while reading, and to failure to think independently about what she read.

*Remedial instruction.*—It was evident from the facts secured in the diagnosis that remedial instruction was necessary along at least three lines: (a) the development of habits of attention and good thinking in both oral and silent reading; (b) the improvement of habits of recognition, including the independent recognition of words, increasing the span of recognition, eliminating irregularities in the return sweep and in the movement of her eyes from left to right along the lines, recognizing words in thought groups in oral reading, and increasing her rate of silent reading; and (c) the development of the habit of thinking independently about what was read and of reaching valid conclusions.

In the beginning of the remedial instruction, an effort was made to develop an appreciation of the fact that reading is a thought-getting process. To accomplish this result, interesting and stimulating questions were asked frequently while she was reading a selection. Her somewhat futile attempts to answer these questions showed that she was not



directing her attention to the content as she read. As a result of continued emphasis on thoughtful interpretation she finally realized that she was expected to give attention to the content.

A second device for developing thoughtful reading habits follows: Cards were prepared containing such directions as, "Find *Old Mother West Wind* on the book shelf. Begin the story on page 21. Read until you find why Johnny Chuck wandered away from his house." Sometimes the answers were given orally and at other times they were given in writing. As rapidly as she was prepared for it, the amount of responsibility for thoughtful reading which was imposed on her was increased.

An attempt was made to stimulate thoughtful reading by supplying reading materials which related to some special line of interest. However, inasmuch as she had no clearly defined interests, she read one type of material at first with the same indifference as another. Fairy stories aroused as much enthusiasm as any that were used. Shortly before the time of this report she gave evidence of interest in historical stories.

The classroom teachers co-operated in establishing habits of good thinking by imposing responsibility on her, daily, for the solution of problems. Her ability to follow a selection or a discussion with undivided attention improved noticeably although she was still below the average accomplishment of children of her age at the close of the experiment.

To develop a wider span of recognition, flash-card exercises containing words, phrases, and sentences, which gradually increased in length, were used. She developed speed in this work very rapidly, which indicated that her difficulty was due not so much to inability to recognize groups of words as to careless habits of recognition or failure in the past to develop appropriate habits. Timed exercises in reading seemed to be most effective in eliminating erratic, irrelevant eye-movements.

In order to increase her rate of reading, selections were chosen in which there were few or no thought difficulties. Such selections were necessary in order to promote rapid forward movements of the eyes. Two methods were employed in using this material. First, she was required to read several paragraphs in a limited amount of time in order to find answers to specific questions. Records were kept from day to day of the amount which she read. Her interest in attaining a satisfactory rate aided her in giving undivided attention to the reading exercises. As a result, her eyes passed more regularly and rapidly along the lines. In the second place, she was asked to read many simple selections outside of school hours to supplement the class exercises.

This aided in the establishment of the fundamental habits and associations on which fluent silent reading depend.

*Results.*—The results of the remedial instruction are shown in Table XL.

TABLE XL

Tests	October Scores	March Scores	Standard Fourth-Grade Scores
The Gray Oral Reading Test.....	37.50	42.50	47
The Burgess Silent Reading Test.....	26	38	50
The Courtis Silent Reading Test, No. 2:			
Rate.....	90	136	145
Comprehension.....	90	95	89
The Monroe Silent Reading Test:			
Comprehension.....	3	8	12.7

These records show marked progress in both oral and silent reading. The most noticeable increase was in rate of silent reading. Inasmuch, however, as she was still somewhat below the standard for her grade in most phases of reading, it was decided to continue remedial instruction until her accomplishments approached more nearly the standards for her grade.

## CASE P

A FOURTH-GRADE BOY WHO WAS WEAK IN RATE OF READING AND IN INTERPRETATION BECAUSE OF LACK OF INTEREST IN READING, LIMITED READING EXPERIENCE, AND FAILURE TO DEVELOP THOUGHTFUL READING HABITS

*Introductory statement.*—A. M. was twelve years and five months old when the study of his case began. He came from a home of very limited means and few intellectual opportunities. He cared little, if any, for reading, his chief interest being in mechanical contrivances. His school progress had been irregular, one year having been spent in the first grade and three years in the second and third grades. In October, 1921, he began to repeat the work of the fourth grade, due to irregular attendance during the previous year. Because he was generally slow in his school work, it was concluded that a careful study of his reading difficulties should be made.

*Preliminary diagnosis.*—Five tests were given in the preliminary diagnosis. The scores which A. M. made and the standard fourth-grade scores are recorded in Table LXI.

The results of the tests indicated that A. M. was below the average fourth-grade child in general intelligence. He was also slightly retarded

in oral-reading accomplishment. In the Burgess Silent Reading Test his score was distinctly low, due largely to his slow rate of reading. This explanation was supported by two facts: he read very slowly in the Courtis Silent Reading Test, and he was able to do twice as many exercises in the Burgess test when they were read to him. His interpretation of simple passages as measured by the Courtis Silent Reading

TABLE LXI

Tests	A. M.'s Scores	Standard Fourth-Grade Scores
The Stanford Revision of the Binet-Simon Tests.....	85	100
The Gray Oral Reading Test.....	46.25	47
The Burgess Silent Reading Test.....	34	50
The Courtis Silent Reading Test, No. 2:		
Rate.....	81	145
Comprehension.....	90	89
The Monroe Silent Reading Test:		
Comprehension.....	7	12 7

Test was slightly above the average and his ability to interpret passages of increasing difficulty as measured by the Monroe Silent Reading Test was below the average. These facts suggested at first that his major difficulty was in the mechanics of reading rather than in interpretation.

His oral reading was characterized by an unusual number of repetitions to correct errors. There was a peculiar shifting of the eyes back and forth, which could be detected readily through observation. As the difficulty of the material increased, he failed to follow the content effectively. This fact was indicated by substitutions which changed the meaning entirely in many cases. Because the preliminary diagnosis secured evidence of real difficulties in both oral and silent reading, a more detailed investigation of his habits of recognition and interpretation was undertaken.

*Detailed diagnosis.*—In the Jones Vocabulary Test, he made a score of 94 on the sight list and a score of 91 on the phonetic list. These scores indicated more inaccuracies in the recognition of simple words than is normally expected in the fourth grade. The errors made were partial mispronunciations, such as *that* for *what* and *track* for *trick*. These errors indicated that he recognized parts of words correctly but failed to see or to recognize other parts accurately. Informal tests of oral reading which were given showed clearly that he could pronounce many relatively difficult words, such as *granite*, *evidently*, *examined*, *material*,

and *sparkling*, but that he failed to group words effectively and to recognize small words accurately. As the interpretation of selections became more difficult and complex the number of minor errors increased.

The results of the short-exposure tests are recorded in Table LXII.

TABLE LXII

Recognition Series	Number of Items in Each Series	Number of Errors in Each Series
Isolated letters.....	26	9
Two-letter non-sense syllables.....	10	8
Three-letter non-sense syllables.....	10	8
Four-letter non-sense syllables.....	10	22
Two-letter words.....	18	2
Three-letter words.....	10	0
Four-letter words.....	10	5
Two-word phrases.....	10	9
Three-word phrases.....	10	17

Three significant facts were revealed by these tests: (a) a large number of errors was made in the recognition of isolated letters and non-sense syllables, which indicated that he did not note details carefully; (b) a relatively small number of errors was made in the recognition of two-, three-, and four-letter words; and (c) a large number of errors occurred in the recognition of two- and three-word phrases, which indicated that his span of recognition was relatively narrow.

Photographic records of his eye-movements were secured for both oral and silent reading. The records showed that he proceeded regularly

TABLE XLIII

ITEMS	ORAL READING		SILENT READING	
	A. M.'s Score	Fourth-Grade Standards	A. M.'s Record	Fourth-Grade Standards
Average number of fixations per line	11.8	10.3	11.6	7.3
Average duration of fixations.....	8.	7.7	7.5	6.7
Average number of regressive movements per line.....	1.4	2	2.8	1.4

from left to right along the line except where periods of confusion occurred. He also made a large number of fixations per line. The extent of his deficiency is expressed in numerical terms in Table XLIII.

It is evident that he made more fixations per line in both oral and silent reading than is made by the average pupil of his grade. Further-

more his habits of silent reading differed but little from those of oral reading, which indicated a marked degree of immaturity for a fourth-grade pupil. The most significant fact revealed by the study of his eye-movement records was the need of increasing his span of recognition, decreasing the number of fixations per line, and increasing to a marked degree his rate of silent reading.

Informal tests of interpretation revealed three important facts: (1) He was able to reproduce a larger amount of material and to answer questions much more effectively when his attention was directed specifically to the content than when he was left to his own devices in reading. (2) Thought-provoking questions that were asked immediately following the reading of a passage frequently secured no immediate response, which indicated that he did not think independently about the content unless stimulated by questions, or other devices, to do so. (3) A general indifference to the content was manifested which resulted in careless oral reading and numerous errors, such as repetitions and omissions. It was also discovered that he had little, or no, real interest in reading.

*Summary of diagnosis.*—The diagnosis revealed the following significant facts: (1) he was below the average in general mental ability; he was not interested in reading, and he did little or no thinking while reading, unless stimulated to do so by interesting devices. (2) He was slightly below the fourth-grade standard in oral-reading accomplishment and considerably below the standard in rate of silent reading. Errors in oral reading were largely omissions and repetitions to correct errors. Mistakes in the recognition of simple words were more prominent than the mispronunciations of longer words. Furthermore, as the passages increased in difficulty to interpret, the number of minor errors in recognition also increased. (3) In the comprehension tests he made a satisfactory score in the Curtis test but was less successful in the interpretation of passages of increasing difficulty. Informal tests showed that he had not formed the habit of directing his attention to the content or of thinking independently about what he read. In the light of these facts the conclusion was reached that his major difficulty was in interpretation due to lack of interest, inadequate reading experience, and failure to develop habits of thoughtful interpretation. Additional difficulties demanding attention were inaccurate recognition of simple words, a narrow span of recognition, and a slow rate of silent reading.

*Remedial instruction.*—The foregoing diagnosis indicated that remedial instruction should attempt, first of all, to accomplish three results: (a) to develop a genuine interest in reading; (b) to stimulate

a thoughtful reading attitude and the habit of thinking independently while reading; and (c) to promote habits of fluent, intelligent reading. As soon as progress has been secured along these three lines specific attention should be given to the following problems: (a) the elimination of inaccuracies in oral reading; (b) the development of a wider span of recognition in both silent and oral reading; (c) more effective grouping of words in oral reading; and (d) a more rapid rate of silent reading.

Special attention was given during the early part of the training period to the development of a keen interest in reading, a thoughtful reading attitude, and habits of good thinking while reading. It was soon discovered that A. M. was very much interested in animals and in animal stories. Therefore the Burgess books, *Merry Animal Tales* by Bigham, and other books containing animal stories were among the first books assigned. He was much more interested, however, in telling what he had heard about the habits of different animals and the things he had observed on summer vacations than in reading about them. It was necessary to suggest interesting questions frequently or to point out specific paragraphs in which the answers to the questions might be found, in order to secure a thoughtful reading attitude. Even when these steps were taken he often missed the significant points in a passage and had to re-read it one or more times before he interpreted it adequately. His inability to get the thought when reading was noticed also by the classroom teachers. The history teacher reported that he was able to do some very good thinking during the discussion periods, but that he gained very little from reading assigned passages.

In order to aid him in developing effective habits of interpretation use was made at first of very simple material and he was held responsible for the details of the passages. When he failed to get the significant points the remedial teacher frequently said "This is what it says" and then read to him in order that he might get the thought both through hearing it and seeing it in printed form. This proved to be a very helpful device and in time he learned to take a thoughtful attitude while reading.

As A. M. gained in ability to find answers to specific questions he was asked to read for complete reproductions. Paragraphs containing only a few lines were assigned at first, and as he reported what he had read a record was made of the percentage of ideas reproduced. His scores were shown to him so that he was aware of the success which attended his efforts. Occasionally he reported in writing the results of his reading. Inasmuch as this method was somewhat laborious it

was not used very frequently because of the short time devoted to remedial instruction.

In order that he might be provided with abundant opportunity to read, assignments were made for home reading and reports on this reading were given on the following day. Home conditions did not offer satisfactory opportunities for study; therefore less of this was required than would have proved beneficial.

Much time was devoted to increasing his rate of reading. This was necessary because he reacted slowly in all of his activities. He moved deliberately, talked very hesitatingly, and thought slowly. Flash-card exercises consisting of words, phrases, and sentences were used at first to increase his span of recognition. His progress was very satisfactory. In a tachistoscopic test, given in February to the children of the University Elementary School, he was in the upper quartile of a group of twenty pupils with whom he was associated. Timed reading exercises were also used and his progress from week to week was noted.

*Results.*—The results of the remedial instruction are shown in Table XLIV which contains the scores made in the March tests.

TABLE LXIV

Tests	December Scores	March Scores	Standard Fourth-Grade Scores
The Gray Oral Reading Test.....	46.25	58.75	47
The Burgess Silent Reading Test.....	34	50	50
The Curtis Silent Reading Test:			
Rate.....	81	98	145
Comprehension.....	90	98	89
The Monroe Silent Reading Test:			
Comprehension.....	7	6	12.7

These scores show improvement in most phases of reading. It should be observed that there was no increase in the score for the Monroe Silent Reading Test. Whether this was due to a lack of appropriate types of training, to his physical condition at the time of the test, or to inadequate native mental ability may be revealed by further study of his case. The fact that he made but little improvement in rate of silent reading is very significant. It indicates that much specific attention is necessary in some cases if satisfactory results are to be secured in establishing fluent habits of reading. Apparently more attention should have been given to the problem of rate of reading in the remedial instruction.

## CASE Q

A FOURTH-GRADE GIRL WHO ENCOUNTERED DIFFICULTIES BOTH IN THE MECHANICS OF READING AND IN INTERPRETATION BECAUSE OF ERRATIC AND INADEQUATE APPLICATION

*Introductory statement.*—E. A. was ten years of age in January, 1922, when the study of her case began. She was pale, thin, restless, and flighty. She was well dressed, neat, and clean. Her teachers reported that she was quarrelsome, a disturbing element in the school, and very erratic in her habits of work. A report of her school work in previous years indicated that her progress had been irregular. She did fairly good work for short periods of time, very poor work at other periods, and unusually good work occasionally.

*Preliminary diagnosis.*—Several standardized tests were used in the preliminary study of her case. The names of the tests, E. A.'s scores, and the standard fourth-grade scores are given in Table LXV.

TABLE LXV

Tests	E. A.'s Score	Standard Fourth-Grade Scores
The Illinois Intelligence Test.....	95	100
The Gray Oral Reading Test.....	31	47
The Burgess Silent Reading Test.....	26	50
The Courtis Silent Reading Test:		
Rate.....	144	145
Comprehension.....	10	89
The Thorndike-McCall Silent Reading Test.....	34	41.8

The scores show that E. A. was slightly below the average in general mental ability and quite weak in most phases of reading. She was a slow, inaccurate oral reader, a relatively rapid silent reader when not held responsible for the content, and noticeably irregular in interpretation.

An examination of her record in oral reading showed that she read the first paragraph fluently and accurately and that she read slowly and with an increasing number of errors as the passages increased in difficulty. She read "jerkily," putting in words, changing the order of words and filling out the thought of sentences with any words which completed the meaning according to her fancy. The errors which she made most frequently were repetitions, insertions, omissions, and substitutions. Although her difficulties in recognition were serious enough to interfere with the interpretation of difficult passages, the extent and nature of her difficulties in the silent-reading tests suggested



that she had weaknesses in interpretation which might account for some of her difficulties in recognition. This suggestion was supported by the fact that her substitutions in oral reading were frequently irrelevant and her omissions and insertions often changed the meaning of passages.

*Detailed diagnosis.*—In order to determine more fully the nature of her difficulties in the mechanics of reading three tests were given. She made a score of 88 in the Jones Vocabulary Test, which showed that she had difficulty in the recognition of simple words. The errors were very slight in most cases, indicating that she either was careless or did not recognize the details of words accurately. She made a number of errors in Word Element Test A but when helped with a word she could readily give other words containing the same phonetic element. This indicated that she was able to distinguish the sounds of word elements, but failed to associate sounds and printed symbols accurately. The short-exposure tests showed that she recognized two-, three-, and four-letter words with a fair degree of accuracy. In the case of two-word phrases, she recognized a few at the first exposure and others only after several exposures. Most of those which were recognized at sight were phrases which occurred frequently in her reading. Furthermore, she would occasionally recognize at the first exposure long expressions, such as *The boys are playing*. This may have been due to the fact that the combination of words was familiar.

In order to secure additional information concerning her habits of recognition, photographic records of her eye-movements were secured. A section of her silent-reading record appears in Plate VIII.

The record shows an unusual number of fixations per line and a wide variation in the duration of fixations. There were frequent periods

TABLE XLVI

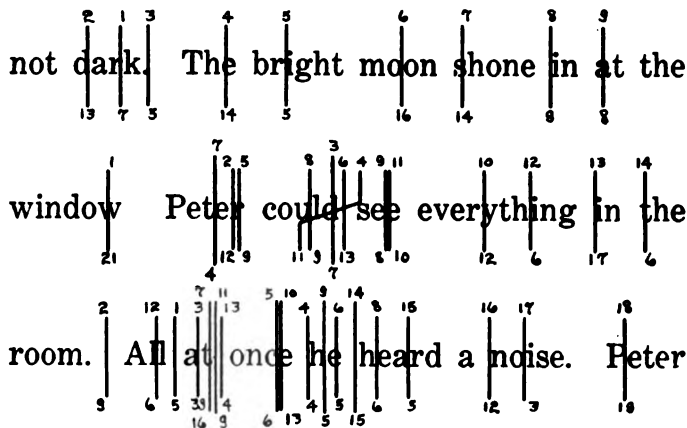
ITEMS	ORAL READING		SILENT READING	
	E. A.'s Record	Fourth-Grade Standards	E. A.'s Record	Fourth-Grade Standards
Average number of fixations per line	13.6	10.3	10.4	7.3
Average duration of fixations. . . . .	14.5	7.7	9.7	6.7
Average number of regressive movements per line. . . . .	3	2	2.2	1.4

of confusion and numerous regressive movements which indicate difficulties in recognition or interpretation. The extent of her deficiencies is shown in Table XLVI.

The entries in this table show clearly that E. A. was distinctly inferior with respect to the average number of fixations per line, the average number of regressive movements per line, and the average duration of fixations. Her records were in general very similar to the records of a poor reader in the second grade who had not yet established habits of accurate fluent recognition and whose eye-movements were still very irregular.

The foregoing diagnosis of her habits of recognition revealed weaknesses that were difficult to explain. Her eye-movements were irregular and her span of recognition in reading was narrow. At times she mispronounced words which she had recognized accurately but a moment

## PLATE VIII



before. She recognized phonetic elements in some words that she failed to recognize in others. Inasmuch as she was able to distinguish sounds accurately and to recognize large units at single fixations in the short-exposure tests, it was concluded that her difficulties were not inherent but were due, in part, to lack of training and to carelessness or inattention.

It might have been concluded at this point that her difficulties in recognition were sufficient to account for her difficulties in interpretation. The fact, however, that she made her lowest score in the Courtis test in which the passages are relatively simple and made higher scores in more difficult tests, indicated that her difficulties were not due entirely to weakness in recognition. Additional evidence in support of this conclusion was secured in informal reading tests. She was first asked to read two paragraphs of a story orally; the next two paragraphs were read to her, and she was then asked to read two paragraphs silently.

In each case she was required to reproduce what she had read. She made a reproduction score of 39 when she read the passages orally, a score of 32 when the passages were read to her, and a score of 21 when she read the passages silently. The fact that she did better when she read orally than when the passages were read to her indicated that she had difficulties in interpretation which were independent of those in recognition. Other simple selections were assigned and questions were asked to test her ability to comprehend what she read. Her responses were usually meager and showed that she did not direct her attention to the content. On the other hand, she grasped the main points of a story occasionally and showed by her answers to questions that she had thought about them. There was every evidence, therefore, of the same irregularity in interpretation that was evidenced in the mechanics of reading.

Since the detailed study of her difficulties in interpretation showed that they were not entirely due to weakness in recognition, other tests were given to determine to what extent failure to direct her attention to content was responsible for difficulties in recognition. Accordingly she was assigned short passages to read silently after suggestions had been given or questions had been assigned. She was encouraged to ask for the pronunciation or meaning of words that she did not know. After she had read a passage silently, it was discussed to insure a clear understanding of its content. She was then asked to read it orally. The numbers of errors decreased slightly, but they were different in kind. There were fewer total mispronunciations and repetitions. On the other hand, the number of substitutions usually increased although they did not always change the meaning. Nevertheless, the tendency persisted to complete sentences without following the printed words closely.

*Summary of diagnosis.*—The diagnosis showed that E. A. was below the standard for her grade in both oral and silent reading. She was an inaccurate oral reader; her eye-movements were irregular; her span of recognition was narrow, and she was erratic in recognizing words and elements of words. A careful study of the causes of her difficulties in oral reading showed that they were due, in part, to lack of training, to carelessness or inattention, and to failure to direct attention to the content of what she read. She was weak in interpretation primarily because of the fact that she had not formed the habit of looking for meaning or of thinking independently about what she read; secondarily, because of difficulties and inaccuracies in recognition. Her rate of silent reading compared favorably with the standard for her grade.

Her relatively high accomplishment in this phase of reading was explained by two facts: she failed to direct her attention to the content, and she skipped the words which she was unable to recognize readily. These habits affected not only her rate of reading but, in addition, her accuracy of oral reading and interpretation. It is apparent from this discussion that an important problem of remedial instruction should be to teach her to read at rates which would permit accurate oral reading and satisfactory interpretation.

*Remedial instruction.*—Remedial instruction was organized to accomplish the following aims: (a) to develop habits of accurate interpretation by holding her responsible for the content of what she read; (b) to develop habits of accurate oral reading by means of exercises to develop independence in word recognition, to increase the span of accurate recognition and to secure more effective grouping of words; and (c) to establish effective habits of thinking while reading by means of exercises which require keen interpretation and independent thinking. In order to accomplish these purposes twenty-five minutes of individual instruction were given each day.

*Developing the habit of directing attention to the content and of interpreting simple selections accurately.*—Since many of her errors in recognition were due to the fact that she read too rapidly and did not direct her attention to the content while reading, accurate interpretations were emphasized during the first two weeks. Simple selections were assigned for oral reading. Each thought unit was prefaced by a suggestion as to its content, or she was assigned something definite to look for while reading. She was frequently asked to read a paragraph silently and to tell what she had read or to answer specific questions. Short selections cut from books and mounted on cardboard were occasionally assigned for outside reading. A short list of questions covering the important points accompanied each story. She was asked to read the story as many times as was necessary to secure satisfactory answers, and she was encouraged to bring questions to the classroom when the meaning of a passage was not clear. Every effort was made to encourage habits of thoughtful reading. As she gained in ability to interpret selections, her interest in reading increased and there was less need for the types of lessons which have just been described.

*Developing habits of accurate recognition: (a) By using content as an aid in recognition.*—Simple familiar selections were used for oral reading at first in order that she might give her undivided attention to problems of recognition. She was frequently able to recognize words accurately because she knew the story. When unfamiliar selections were used,

she was asked to read silently before she read orally. The story was then discussed to insure accurate interpretation. When she finally read aloud, the content was familiar and she was able to read fairly accurately. Later, she was asked to read selections at sight, and it was found that her difficulties in recognition decreased if each thought unit was prefaced by suggestions concerning the content.

(b) *By establishing correct associations between symbols and meanings.*—Words which she failed to recognize were supplied while she was reading, but they were used in drill exercises later to insure independent recognition. The words were written on the board in sentences so that she could see them in context. This association of meaning and symbols was a necessary step in developing accurate recognition.

(c) *By using phonetics as an aid in independent recognition.*—She had difficulty in recognizing words containing such phonetic elements as *str*, *scr*, *ch*, *ar*, *ew*, and *oo*. When she failed to recognize *ar* in the word *star* she was given *far*, *car*, and other words which she knew. When the word *star* was then written in the same list, she was able to pronounce it. Other words containing the same element were supplied by her and written on the board. These lists of words were used in drill exercises until she was able to recognize in many combinations the elements which caused difficulty.

(d) *By holding her responsible for minor errors.*—When she omitted short words or parts of words, substituted one word for another, such as *where* for *there* and *come* for *came*, and made other errors due entirely to carelessness, she was frequently told the number of errors that she had made in a paragraph, and she was asked to re-read it correctly. When her attention was called to errors she could usually correct them without additional help.

*Increasing her span of recognition.*—During the latter part of the training period, much attention was given to the recognition of words in thought groups. Sentences which caused difficulty were written on the board and she was asked to read them silently first and then to read them aloud, grouping the words effectively. The crayon was sometimes passed rapidly under the words that belonged together in order to emphasize accurate phrasing. An example follows, The little boy fell down and hurt his knee. In addition, short phrases printed on cards were used in quick-perception drills. The length of the phrases was increased as rapidly as her span of recognition developed.

*Developing keener interpretation and encouraging independent thinking in more difficult selections.*—As soon as she had made satisfactory progress in interpreting simple material, more difficult selections were assigned

and more time was given to silent reading. She was given lists of questions to direct her attention to the most important points. After reading a selection she was asked other questions to test her ability to think independently about what she read. She was encouraged to discuss stories, to tell which ones she liked best, and to express her opinion concerning points discussed in the stories.

*Increasing her rate of silent reading.*—Although she made a satisfactory rate score in the preliminary test, it was found that this score was not a true index of her rate of silent reading because she omitted words that she did not recognize at sight. After she had formed the habit of thinking about the content while reading, she felt a greater responsibility for accurate recognition and she read very slowly. As her span of accurate recognition increased, she began to read more rapidly. She had just reached the point in the reorganization of her reading habits at the close of the training period when specific exercises to increase the rate of silent reading could have been given to advantage.

*Results.*—At the end of nine weeks of instruction, she was given the tests again. Her January scores, the scores which she made in March, and the standard scores for her grade are included in Table XLVII.

TABLE XLVII

Tests	January Scores	March Scores	Standard Fourth-Grade Scores
The Gray Oral Reading Test.....	31	38.62	47
The Burgess Silent Reading Test.....	26	44	50
The Courtis Silent Reading Test:			
Rate.....	144	107.6	145
Comprehension.....	10	76	89
The Thorndike-McCall Silent Reading Test.....	34	40	41.8

The scores indicate that she had made some progress in oral reading and considerable progress in interpretation, although she was not up to the standard for her grade in either case. Her rate of silent reading in March was below her rate in January for reasons which have already been explained. Frequent absences interfered to some extent with her progress. It is evident that additional training along the lines which have been described was still necessary.

#### CONCLUSIONS CONCERNING REMEDIAL INSTRUCTION

Cases have been reported in which ineffective rates of reading have been corrected through the use of one or two devices such as

exercises (a) to establish regular movements of the eyes from left to right along the printed line, (b) to develop rapid recognition of words, (c) to promote accurate recognition of words in groups, (d) to develop a wide span of recognition, (e) to direct attention to the content, (f) to stimulate interest in reading a large number of simple interesting stories, and (g) to develop the habit of reading at a maximum rate by means of timed reading exercises. These and many other methods of increasing the rate of silent reading have been described in recent discussions. The cases which have been reported in this chapter emphasize the fact that a pupil may read slowly because of poor or inaccurate habits in other phases of reading. In such cases the pupil's rate of reading cannot be improved until these related habits have been corrected. Therefore, remedial instruction to improve the rate of silent reading may include exercises in the mechanics of oral reading and in the interpretation of what is read.

The various studies reported in this monograph justify a second conclusion concerning remedial instruction in silent reading which may be expressed as follows: emphasis on the rate of silent reading is usually inappropriate before pupils have learned to recognize words as rapidly as they are able to pronounce them. Investigations have shown that some pupils reach this stage in their development as early as the second grade. Other pupils encounter so many difficulties in recognition that they never learn to read fluently. As a rule pupils in the third grade begin to read silently more rapidly than they read orally. Teachers should guard against undue emphasis on rate until the rudimentary habits have been thoroughly established. As soon as specific exercises to increase the rate of reading are appropriate, much time and energy should be devoted to the establishment of fluent habits.

A third suggestion which comes from the study of pupils who fail to read satisfactorily is that some read too rapidly and neglect details. In such cases the pupil's attention must be directed to the content and he must be held responsible for the accurate recognition of words and their meaning. This usually results in decreasing the rate of reading temporarily. As soon as habits of accurate recognition and interpretation have been established, exercises should be introduced to increase the rate of accurate reading. The statement should be added that similar cases must be studied very carefully in order that effective instruction may be given at each stage in the reorganization of the pupil's habits.

## CHAPTER VIII

### PUPILS WHO WERE WEAK IN PRACTICALLY ALL PHASES OF READING

Four distinctly different types of cases have been discussed in the preceding chapters, namely, "Pupils Who Had Made Little or No Progress in Learning to Read," "Pupils Who Encountered Serious Difficulty in Interpretation," "Pupils Who Encountered Difficulties Primarily in the Mechanics of Reading," and "Pupils Who Encountered Difficulty in Rate of Reading." It is very appropriate that the last type of remedial case to be discussed should relate to pupils who were weak in practically all phases of reading.

There are interesting and significant differences between the cases reported in this chapter and those in earlier chapters. (1) The cases described in chapter iv had made little or no progress in learning to read; consequently they were weak in all phases of reading. The cases which are described in this chapter had made considerable progress in learning to read, but were weak in practically all phases of reading. (2) Each case described in chapters v, vi, and vii was weak in a particular phase of reading, such as interpretation, the mechanics of reading, or the rate of silent reading. Each case described in this chapter was weak in practically all phases of reading. (3) The cases reported in this chapter encountered difficulties in several phases of reading, each weakness usually accentuated by difficulties in other phases. The cases reported in earlier chapters had difficulties in several phases of reading that could usually be attributed to serious weakness in a particular phase.

Pupils who are seriously retarded in most phases of reading are found in almost every classroom. They are unable to do satisfactory work in the reading class or to prepare assignments in content subjects satisfactorily. Their deficiencies are both quantitative and qualitative. Because current methods of school organization do not provide the necessary time or energy for individual instruction, retarded pupils soon become discouraged and in far too many cases discontinue school work. The diagnostic and remedial studies which have been recently reported provide convincing evidence that the difficulties which many pupils encounter can be overcome successfully if appropriate remedial instruction is provided.



Fortunately for the classroom teacher, pupils who are weak in practically all phases of reading can be readily distinguished. (1) They fall below the standard scores in all reading tests, with but few exceptions. (2) They read aloud inaccurately and they fail to interpret what they read silently. (3) They are unable to prepare assignments in content subjects in the usual length of time. (4) Whenever difficulties are encountered in reading, they are unable to solve their problems independently. (5) They are not interested in the reading exercises and they do little or no reading on their own initiative. The foregoing list of common characteristics is supplemented by significant individual differences in the reports which follow.

## CASE R

A FOURTH-GRADE GIRL WHO WAS GREATLY RETARDED IN THE MECHANICS OF READING AND SOMEWHAT RETARDED IN INTERPRETATION DUE PRIMARILY TO CARELESS READING HABITS, INADEQUATE ATTENTION TO THE CONTENT, AND LIMITED EXPERIENCE

*Introductory statement.*—B. P. was ten years old in October, 1921, when the study of her case began. She was deficient in language ability and her background of experience was limited. Her teachers reported that she was timid, careless in her habits of work, indifferent concerning her progress, and very irregular in attendance. She had chronic appendicitis which caused her to be absent frequently and which, no doubt, affected the quality of her work to some extent. She was not interested in reading and her work in all content subjects was unsatisfactory.

*Preliminary diagnosis.*—The names of the standardized tests which were used in the preliminary diagnosis, B. P.'s scores, and the standard fourth-grade scores are included in Table XLVIII.

TABLE XLVIII

Tests	B. P.'s Scores	Standard Fourth-Grade Scores
The Illinois Intelligence Test.....	80	100
The Gray Oral Reading Test.....	26.25	47
The Burgess Silent Reading Test.....	20	50
The Curtis Silent Reading Test:		
Rate.....	95	145
Comprehension.....	75	89
The Monroe Silent Reading Test:		
Comprehension.....	4	12.7

These scores indicate that B. P. was considerably below the average in general intelligence and in oral-reading accomplishment. She was

below the standards for her grade in rate of silent reading and in ability to interpret what she read in all tests except the Courtis. A study of her oral-reading record showed that she read very inaccurately. She omitted and inserted short words, repeated frequently, made many slight errors, such as *over* for *ever*, and encountered difficulties in the pronunciation of polysyllabic words. A study of her test papers in silent reading showed that she had difficulty in answering questions about simple passages and that she encountered a great deal of difficulty in the tests which required independent thinking. As far as could be determined, she was retarded both in the mechanics of reading and in interpretation. Furthermore, it seemed that the difficulties in each accentuated the difficulties in the other. In order to secure additional information concerning her reading difficulties, a more detailed study of her case was undertaken.

*Detailed diagnosis.*—In the Jones Vocabulary Test, she made a score of 90 on the sight list and 74 on the phonetic list. Whenever errors occurred, the words which were pronounced usually differed very slightly from the printed word, as *big* for *dig* and *ship* for *skip*. Many errors were due to carelessness, as shown by the fact that she was able to correct them without assistance when her attention was called to them. Other errors were due to the fact that she did not know some of the simple phonetic elements. In the visual memory test, she made five slight errors. The fact that she was able to correct the error in most cases, when told that her first attempt was incorrect, supplied further evidence that she did not see details accurately, due very largely to carelessness.

Informal tests in oral reading revealed several significant facts (1) She frequently mispronounced words in context which she recognized accurately when isolated. (2) Many substitutions, such as *trust* for *taste*, and *rob* for *rub*, indicated that she did not direct her attention to the content. (3) She had difficulty in distinguishing different forms of the same word, such as *come*, *came*, and *coming*, or *work*, *worked*, and *working*. (4) She repeated frequently either because the thought was not clear or to correct errors. (5) She had some knowledge of phonetics as shown by her ability to recognize certain word elements, but she failed to use her knowledge effectively. (6) She read very haltingly because of word difficulties and because she recognized individual words rather than groups of words at each fixation.

Informal tests in silent reading revealed evidence of a limited background of experience and an inadequate meaning vocabulary.

Furthermore, her difficulties in the pronunciation of polysyllabic words interfered with the interpretation of the thought of more difficult passages. In simple selections her weakness in interpretation was due largely to the fact that she had not formed the habit of directing her attention to the content. She was satisfied with a general impression of the story and was unable to answer specific questions concerning the content or to think independently about it. When told beforehand that she would be asked to retell a story, she reproduced the points satisfactorily.

*Summary of diagnosis.*—The diagnosis showed (a) that B. P. was below normal in general intelligence, (b) that she was a poor oral reader due to the inaccurate recognition of simple words in groups, to difficulties in the pronunciation of polysyllabic words, to careless reading habits, and to failure to direct her attention to the content while reading, (c) that she was below the average for her grade in rate of silent reading because of word difficulties, frequent repetitions, and a narrow span of recognition, and (d) that she was considerably retarded in interpretation due primarily to her low native intelligence, an indifferent attitude toward reading, limited experience, an inadequate meaning vocabulary, ineffective habits of reading, and difficulties in the mechanics of reading. The diagnosis revealed two additional facts of significance: (a) although her difficulties in recognition were more pronounced than those in interpretation, the former were due largely to inadequate attention to the content; and (b) she encountered difficulties both in recognition and in interpretation which were independent of those in the other.

*Remedial instruction.*—In the light of the facts secured in the diagnosis, remedial instruction was organized to accomplish three major purposes: (a) to awaken an interest in reading, to extend her experience, and to develop a feeling of responsibility for accurate work; (b) to develop the habit of looking for meaning in all reading exercises, and to promote habits of good thinking while reading; and (c) to overcome difficulties in the mechanics of reading and to increase her rate of silent reading. In order to accomplish these purposes, she was given individual instruction for twenty-five minutes each day. A great deal of time was spent during the first few days in informal discussions to discover her interests and to promote her acquaintance with the teacher. During the first few weeks most of the reading was oral in order to discover the exact nature of her difficulties and to give any help that was needed. Accurate recognition was emphasized although content was considered of primary

importance at all times and was used as an aid in recognition. Silent reading was assigned later and special attention was given to interpretation.

*Extending her experience and awakening an interest in reading.*—She was not interested in reading at first because she understood very little of what she read. The experiences described in the stories were new to her and the meaning of many words was not clear. Simple selections, based on a variety of experiences, were assigned. The stories were discussed by the teacher, meanings of words were explained, and additional information was given. Several closely related stories were also assigned to enlarge her experience along given lines, and other stories were told to her. Plays based on dramatic stories were frequently assigned. Stage settings, costumes, and characters were discussed in order to stimulate keen interest in reading these stories. Discussions of the selections which were read showed that she liked fairy stories best. Several familiar ones and many new ones were assigned. Later she became interested in animal stories and stories of adventure.

*Developing habits of thoughtful reading.*—Short selections containing one or two important points and but few details were assigned at first. Her attention was directed to the essential points by giving specific directions and suggestions, such as "Find out why the goose in this story was called foolish." When she read selections at sight, comments or suggestions concerning the content were made from time to time and questions were asked (a) to test her comprehension of what she had read, (b) to emphasize the important points, and (c) to aid her in keeping the facts in mind in correct sequence. For example, she was asked "How many people has the boy met?" "What did each one tell him?" "The next paragraphs will tell how the boy used what he learned from each." "How was he helped by the cobbler's story?" If she had difficulty in understanding a passage it was read to her and the meaning was discussed.

She was frequently asked to reproduce stories in order to discover some of the causes of her difficulties in interpretation. It was found that she failed at times because she did not get the meaning of key words or because she did not direct her attention to the content while reading. When told that she would be asked to reproduce a story, she read more carefully and made greater effort to understand all of the essential points. When selections were assigned for silent reading, she was given a list of questions to stimulate and guide her thinking. After reading a selection, she was asked to look over a list of questions before

she answered them aloud. If she was not sure of the answers, she was permitted to re-read the relevant parts.

Thought-provoking questions were asked about all of the selections which she read in order to stimulate independent thinking. Exercises, such as the following, were sometimes assigned to test her ability to interpret stories and to follow directions.

1. Write the names of the two animals that ran a race.
2. What was to happen to the animal which won the race?
3. Which animal won?
4. Which animal asked the man to help?
5. What did the man do?
6. If you think the man did right, draw a line under the word "right."  
If you think he did not do right, draw a circle around it.
7. Was it the horse which got his wish?
8. Write a sentence which tells what you think of the horse.

*Overcoming difficulties in the mechanics of reading: (a) By using content as an aid in recognition.*—Such substitutions as *big* for *beg* and *had* for *hid* indicated that she did not look for meaning while reading. When her attention was directed to the content of selections, as described in the preceding paragraphs, the number of errors decreased noticeably. Words which caused difficulty were used in sentences at the end of each period in order that she might study their meaning more carefully and make the correct associations.

*(b) By holding her responsible for accurate reading.*—Inasmuch as she was able to correct many errors without further help when her attention was called to them, she was asked to read passages accurately the first time. When she failed to do so, she was given specific suggestions and was asked to re-read. Sometimes she was told that she had made a certain number of errors in a sentence and she was asked to correct them without additional assistance. Whenever she read accurately and effectively, she was commended for her effort. Slowing down her rate of oral reading also helped her to read more accurately. Words such as *through* and *though* which she repeatedly confused were used in sentences for several days. They were then written on cards and used in drill exercises to aid in rapid, accurate recognition.

*(c) By using phonetics and ear training as an aid in recognition.*—Many minor errors in reading were due to the fact that she did not hear differences in the sound of words. She had difficulty in distinguishing between the sound of short *e* and of short *i* and she used such words as *lit* and *let* interchangeably. When asked to name words containing

short *i*, she frequently included words containing short *e*. If several words containing short *i* were pronounced very distinctly and then written on the board she could usually add others to the list. The simplest words containing short *i* were given at first in groups with the same ending, such as *sit*, *bit*, and *fit*, *pin* and *win*, *fill* and *will*. Words were then presented in lists with different endings and initial consonants, such as *sit*, *win*, *hid*, *still*, and *since*. After short *e* had also been given, lists of words, such as *bed*, *his*, *then*, and *hill*, were presented in drill exercises in order to test her ability to recognize them accurately. Other short vowels were taught in the same way when she failed to recognize words containing them. Several consonant blends, such as *spr*, *str*, *bl*, and *st*, were given special attention.

(d) *By establishing the habit of grouping words effectively.*—She made many errors because she did not recognize words in thought groups. She read very haltingly and frequently paused in the middle of phrases, as "The boy ran to --- see the fire." This was due, in part, to the fact that she frequently failed to recognize words when she saw them in sentences, but primarily to the fact that she had never acquired the habit of grouping words effectively in oral reading. Directing her attention to the content and emphasizing correct phrasing overcame her difficulties to some extent. She was then given quick-perception drills on phrases, such as *once there were* and *there was once*, which she frequently confused, and on other phrases selected from reading exercises.

*Results.*—The training was continued for eleven weeks. She was absent at least one period each week and was frequently absent for

TABLE XLIX

Tests	October Scores	December Scores	Standard Fourth-Grade Scores
The Gray Oral Reading Test.....	26.25	37.25	47
The Burgess Silent Reading Test.....	20	50	50
The Courtis Silent Reading Test:			
Rate.....	95	101	145
Comprehension.....	75	80.75	89
The Monroe Silent Reading Test:			
Comprehension.....	4	9.5	12.7

several days at a time. After an absence of a few days, she would lapse again into her careless habits of reading and it was necessary to repeat much of the remedial work. At the end of eleven weeks she was given the tests again. The scores which she made in October and December and the standard scores are included in Table XLIX.

The scores indicate that she had made considerable progress in all phases of reading but that she was not yet up to the standard for the grade except in the Burgess test. It is evident that additional training was needed in oral reading, in interpretation, and in rate of silent reading.

## CASE S

A SIXTH-GRADE BOY WHO WAS RETARDED IN BOTH RECOGNITION AND INTERPRETATION, BUT WHOSE DIFFICULTIES IN THE INTERPRETATION OF SIMPLE PASSAGES WERE OF MOST SIGNIFICANCE

*Introductory statement.*—C. L. was thirteen years old when the study of his case began in January, 1922. He seemed to have no physical defects which interfered with his progress in reading. His parents were foreign-born and he had a tendency to mispronounce words containing *th*. He was poorly dressed and it was evident that his home conditions were unsatisfactory. His teachers reported that he was lazy and indifferent. He was deliberate in all of his movements and slow in his mental reactions.

*Preliminary diagnosis.*—The tests which were used in a preliminary diagnosis of the case are named in Table L; also C. L.'s scores and the standard sixth-grade scores.

TABLE L

Tests	C. L.'s Scores	Standard Sixth-Grade Scores
The Illinois Intelligence Test.....	78	100
The Gray Oral Reading Test.....	41	49
The Burgess Silent Reading Test.....	38	50
The Curtis Silent Reading Test:		
Rate.....	143	191
Comprehension.....	93	95
The Thorndike-McCall Silent Reading Test.....	42	53.7

The tests showed that C. L. was decidedly below normal in general mental ability, that he was retarded approximately a year and a half in oral-reading accomplishment, that he read silently much more slowly than the average pupil of his grade, and that he scored somewhat below the average in comprehension, particularly in the Thorndike-McCall test.

A study of his oral-reading record showed that he read simple passages fluently and with few errors. As the difficulty of the paragraphs increased, the number of errors increased also, resulting in repetitions,

omissions, and occasional substitutions which did not change the meaning materially. His most noticeable error in difficult paragraphs was the partial mispronunciation of polysyllabic words, such as *profusion* and *persistently*. Questions relative to the content of paragraphs brought out the fact that he did not know the meaning of many words which he could pronounce. This interfered seriously with his grasp of the essential ideas of a passage.

The preliminary diagnosis failed to reveal a complete explanation for his low scores in reading. In some tests it seemed as if recognition difficulties were most pronounced; in other tests it appeared that he had difficulties in interpretation which were independent of those in recognition. Additional diagnostic steps were therefore taken to determine which type of difficulty was most significant.

*Detailed diagnosis.*—In Word Recognition Test A, he made a score of 100 which showed that he could pronounce simple isolated words accurately. In Word Element Test A, he recognized all the words at sight and was able to give other words containing the same phonetic elements. The short-exposure test was given to determine his span of recognition. He recognized the single letters and the two-, three-, and four-letter words at the first exposure. He made six errors in recognizing six two-word phrases, such as *for fun* and *more cake*, two errors in recognizing six three-word sentences, such as *who is there*, and eight errors in recognizing six three-word phrases, such as *bright warm sun*. The most serious defect revealed by these tests was a narrow span of recognition.

Records of his eye-movements in both oral and silent reading were secured. A reproduction of a portion of his silent-reading record appears in Plate IX. The most striking characteristic of his reading

TABLE LI

ITEMS	ORAL READING		SILENT READING	
	C. L.'s Record	Sixth-Grade Standards	C. L.'s Record	Sixth-Grade Standards
Average number of fixations per line.	13.2	8.9	12.2	7.3
Average duration of fixations.....	6.4	7.3	6	5.9
Average number of regressive movements per line.....	3.2	1.4	1.6	1.6

revealed by the record is the large number of fixations per line. In Table LI this and other characteristics of his reading are compared with the standards for the sixth grade.



It is apparent that he had not developed the habit of recognizing large units at each fixation in silent reading. In fact, he did not do so well as an average second-grade pupil. With respect to the duration of fixations and the number of regressive movements per line, he was only slightly retarded. In oral reading, on the other hand, he made 3.2 regressive movements per line which is more than is usually made by second-grade pupils. A comparison of the average number of fixations per line in oral reading and in silent reading shows clearly that he had not established habits of eye-movements in the latter which were distinctly different from those in the former. The two constructive

## PLATE IX

not dark. | The bright moon shone in at the  
 window. Peter could see everything in the  
 room. | All at once he heard a noise. | Peter

suggestions which resulted from the study of these records are the importance (a) of eliminating regressive movements in oral reading and (b) of increasing the span of recognition and reducing the number of fixations per line in silent reading.

The foregoing studies of recognition showed that he had little or no difficulty in recognizing simple isolated words, but that difficulties were frequently encountered in the recognition of polysyllabic words. Furthermore, the diagnosis showed that he had a narrow span of recognition. This doubtless accounted in part for his slow rate of silent reading, for his failure to recognize words in thought groups, and for frequent errors in the recognition of simple words in sentences.

Informal tests were next given in order to study more fully his difficulties in interpretation. He responded readily to questions based on simple narrative stories, but his responses showed that he frequently

failed to direct his attention to the important points. He encountered special difficulty in the interpretation of stories and selections which were not factual in character. He was unable to use his imagination effectively in picturing unfamiliar situations. Furthermore, when asked for his opinion, or when asked questions which required independent thinking, his responses were often meager. When called upon to read orally, he was usually able to read accurately the passages which had caused difficulty in interpretation. These facts indicated clearly that his power of interpretation of simple passages was less fully developed than his power of recognition. In more difficult passages he read mechanically and often failed to get the thought because of his limited meaning vocabulary. For example, in one story the word *porcelain* occurred. He thought it was a kind of oil and evidently had confused it with *petroleum*. Undoubtedly his lack of interest in school work and his low native intelligence contributed directly to poor interpretation.

*Summary of diagnosis.*—The diagnosis showed that C. L. ranked below the average for his grade in general mental ability and in all phases of reading which were tested, that he read simple passages aloud with few errors, and that he encountered difficulties in the pronunciation of polysyllabic words. Furthermore, he had a narrow span of recognition which resulted in a slow rate of silent reading, in the inaccurate recognition of simple words in oral reading, and in failure to recognize words in thought groups. It appeared in the preliminary diagnosis that difficulties in recognition were more serious than difficulties in interpretation. The detailed diagnosis revealed the fact that he was unable to interpret many passages which he could read accurately, that he failed to think independently about what he read, that he had little or no ability in picturing unfamiliar situations, and that he had a limited meaning vocabulary. It was concluded, therefore, that difficulties in interpretation were of most significance.

*Remedial instruction.*—The following aims of remedial instruction were adopted: (a) to secure his interest and whole-hearted co-operation; (b) to emphasize the accurate interpretation of simple passages, including clear thinking and independent judgment about what he read; (c) to supplement this training by exercises calculated to improve his span of recognition, his rate of silent reading, and the recognition of words in thought groups in oral reading; and (d) to introduce, as need arises, training in the recognition of polysyllabic words.

C. L. was given individual instruction for twenty-five minutes each day. The time was used as follows: (a) the first few minutes

were devoted to informal discussions, reports, reproductions, or answers to questions based on outside readings; (b) most of the time was spent in silent reading or in reading selections orally with attention directed primarily to the content; and (c) the remainder of the time was spent in drill exercises to overcome his difficulties in the mechanics of reading. The methods and devices which were used are described in the following paragraphs.

*Securing interest.*—Through informal talks and by observing what he selected at the reading table, it was found that he liked animal stories, stories of adventure, and selections based on history. These facts furnished a basis for the selection of reading material for class exercises. When the selections were based on historical facts he was asked to recall the setting from his own knowledge of history, or the necessary background was supplied. In stories of other types, his interest was frequently aroused by telling parts of them to him or by relating incidents associated with them. Every opportunity was used to expand meanings, to make additional associations, and to suggest closely related stories for outside reading. In order to stimulate his imagination, fairy tales and myths were introduced. He became interested in several Greek myths which were read in class, and he asked for stories to read at home. He also read Viking tales, folk stories of different lands, and imaginative stories. When given a book from which to choose a story, he frequently read several selections and occasionally read the entire book. He became sufficiently interested in reading to ask how he might secure books from the public library. The necessary instructions, together with a list of suitable books, were given to him by the training teacher.

*Overcoming difficulties in interpretation.*—He was assigned short and very simple passages at first and accurate interpretation of their content was required. Definite assignments were made in order to direct his attention to the important points. For example, the following suggestions were made: "Determine why the wolf failed to catch the fox," or "Find out how many places the boy visited." "What did he get in each that was of use to him later." As soon as he was successful in interpreting simple selections, more difficult ones were assigned. A list of questions covering the main points of a story served as a guide in his silent reading. If he failed to answer a question, he was shown the paragraph containing it and was asked to re-read it. If he failed to interpret it satisfactorily, the passage was read to him and difficulties were explained. He was encouraged to discuss selections and his comments often revealed the fact that he had attached wrong meanings to words. He was frequently told that he would be asked to reproduce

the important points of a story that he had read outside of school. This made it necessary for him to remember incidents in correct sequence and to determine relative values in deciding which were the important points. He was encouraged to think independently about what he read by such questions as "Did the wolf deserve his punishment?" "Why?" "How might he have escaped?" "In what ways were the wolf and the fox different?" "What other title would have been appropriate for this story?" A wide variety of selections of an imaginative and problematic type was used in order to stimulate his imagination, to broaden his background of experience, to enlarge his meaning vocabulary, and to encourage good judgment in given situations.

*Increasing his span of recognition.*—Considerable attention was given to the recognition of words in thought groups in oral reading. Passages were read to him and effective grouping of words was emphasized. Questions which directed his attention to the content frequently aided in securing appropriate grouping. For example, after reading very poorly such a sentence as "The fox lived at the foot of the hill," he was asked "Where did the fox live?" He was then directed to re-read the sentence. Short phrases which caused difficulty and those which he encountered frequently were printed on cards and used in quick-perception drills. A record was kept for several weeks of the number of errors made each day in order that he might be informed concerning his progress. When his record on short phrases was satisfactory, he was given other exercises containing longer phrases. As his span of recognition increased, his rate of silent reading increased also. Wide reading of simple material was also valuable in increasing his rate of silent reading.

*Increasing his ability to recognize simple words and to pronounce polysyllabic words.*—Attention was given to certain phonetic elements that caused difficulty in the recognition of simple words, such as *igh* in *bright*, *ea* in *plead*, and *kn* in *knight*. He was also given the following rules which enabled him to determine when vowels were long or short. (1) When a one-syllable word has only one vowel, that vowel is usually short, as in *hat*. (2) When there are two vowels together in a word, as in *seat*, the first vowel is usually long and the second one is silent. (3) A final *e* in such words as *late* and *hope* makes the preceding vowel long. In this connection, he was shown that *hat* becomes *hate* and *not* becomes *note* when a final *e* is added.

When he encountered difficulties in the pronunciation of polysyllabic words, they were analyzed for him. In this way, he learned that they were frequently made up of words which he already knew, combined

with certain prefixes and suffixes. He was shown how words are built up as *come, become; play, playful, playfully*; and, *turn, return, returning*. Lists of words based on his difficulties and containing such prefixes as *re, ex, de, in*, and *pro* and such suffixes as *er, ess, ing, ly*, and *tion* were studied.

*Results of the training.*—After nine weeks of instruction, he was given the tests again. He was excluded from school two of the nine weeks because he refused to be vaccinated. This shortened the actual period of training to seven weeks. The scores which he made before training, after training, and the standard scores for his grade are included in Table LII.

TABLE LII

Tests	January Scores	March Scores	Standard Sixth-Grade Scores
The Gray Oral Reading Test.....	41	52.5	49
The Burgess Silent Reading Test.....	38	62	50
The Courtis Silent Reading Test:			
Rate.....	143	155	191
Comprehension.....	93	95.5	95
The Thorndike-McCall Silent Reading Test.....	42	50	53.7

These scores indicate that in March he was slightly above the standard for his grade in oral reading and in ability to interpret what he read in the Burgess and the Courtis tests. He was somewhat below the standard in the Thorndike-McCall test and in rate of silent reading. According to these scores his greatest need at the close of the training period was exercises to increase his rate of silent reading.

## CASE T

A THIRD-GRADE BOY WHO WAS RETARDED IN BOTH ORAL AND SILENT READING DUE VERY LARGELY TO DIFFICULTIES IN LEARNING TO RECOGNIZE WORDS ACCURATELY AND READILY

*Introductory statement.*—D. H. was ten years old in October, 1921. His home conditions were excellent; he had access to books and magazines suitable for a boy of his age, and his parents had read to him almost daily and had encouraged him to read for himself. On inquiry it was found that several members of the family had difficulty in learning to read and that a sixteen-year-old brother had never learned to read satisfactorily. D. H. had no physical defects likely to interfere with

his progress in reading except crowded and protruding teeth. This defect interfered with clear enunciation and the accurate pronunciation of words. According to the reports of his teachers, he was poor in all subjects which required reading. He had failed to be promoted to the fourth grade and was discouraged because his twin sister was two grades ahead of him. He was interested in all school activities, was industrious, and seemed capable of doing good work. He acknowledged that he disliked reading and had done very little of it outside of school because he could read only with great effort.

*Preliminary diagnosis.*—A preliminary study of the case was made through the use of five standardized tests. The names of the tests, D. H.'s scores, and the standard third-grade scores are included in Table LIII.

TABLE LIII

Tests	D. H.'s Scores	Standard Third-Grade Scores
The Illinois Intelligence Test.....	85	100
The Gray Oral Reading Test.....	36.25	46
The Burgess Silent Reading Test.....	26	50
The Courtis Silent Reading Test:		
Rate.....	79	113
Comprehension.....	61	78
The Haggerty Reading Examination, Sigma I:		
Test I.....	11	16
Test II.....	8	14

The scores indicate that D. H. was below the standard in intellectual ability and considerably retarded in all phases of reading. His low score in the intelligence test was due largely to failure in exercises which required reading. An examination of his oral-reading record showed that he read at an unusually slow rate, made numerous errors in the simplest passages, and totally mispronounced many words in the more difficult passages. He did not score on any of the passages beyond the fourth. His most frequent errors were (a) substitutions of such words as *found* for *full*, *small* for *same*, *mud pies* for *maple sugar*, and *please* for *puss* which changed the meaning considerably, (b) omissions or additions to parts of words, such as *Jack* for *Jackie*, *like* for *likes*, *around* for *round*, and *every* for *ever*, (c) repetitions, and (d) occasional omissions of short words. The fact that he substituted one word for another or totally mispronounced the key words in sentences caused him to become confused and to make other errors.

It was apparent that his difficulties in recognition, even in simple passages, were sufficient to interfere with his ability to interpret what he read. Further evidence in support of this view was gained in a study of his test sheets in silent reading which showed that he scored noticeably higher in exercises in which the vocabulary was simple and contained words with which he was familiar. In order to determine to what extent his difficulties in interpretation were due to difficulties in recognition, a more detailed study of the case was made.

*Detailed diagnosis*—In the Jones Vocabulary Test, he made a score of 85 on the sight list and 66 on the phonetic list. These scores showed that he had difficulty in recognizing very simple words and either that he had little knowledge of simple phonetic elements or that his knowledge did not aid him in the recognition of words while reading. It was also evident that his difficulties were not confined to one type. He sometimes missed the initial consonant, the ending of a word, or the vowels. Most of the words that he substituted were similar in form, which showed that he did not recognize all of the details of words or that he failed to make the correct associations. It is interesting in this connection to know that when he encountered a difficult word, he usually spelled the word to himself.

Additional informal tests in oral reading showed that he read very haltingly, recognizing one word at a time. He often missed a key word in a sentence, which usually led to other errors. He sometimes realized that he had mispronounced a word and he repeated to correct it. At other times, because of difficulties in recognition, he lost the thought of the sentence and repeated to get the meaning of what he had read or to get a clue to the pronunciation of a difficult word. He was often able to recognize a word, such as *white*, if told that the word described the color of a cat. Furthermore, he was frequently able to recognize such words as *upon* and *into* after they had been separated into syllables. He had great difficulty with words beginning with consonant blends, such as *spl*, *fr*, *bl*, and *sw*. He was unable to determine whether the vowels in such words as *made*, *hop*, *spite*, and *fed* were long or short unless the content of the sentence made it clear.

Photographic records of his eye-movements were secured in order to study the character of his fixations in both oral and silent reading. A reproduction of a portion of his oral-reading record appears in Plate X.

The record reveals four significant characteristics of his reading; namely, an unusually large number of fixations, very long fixation periods, a large number of regressive movements, and inaccurate return sweeps

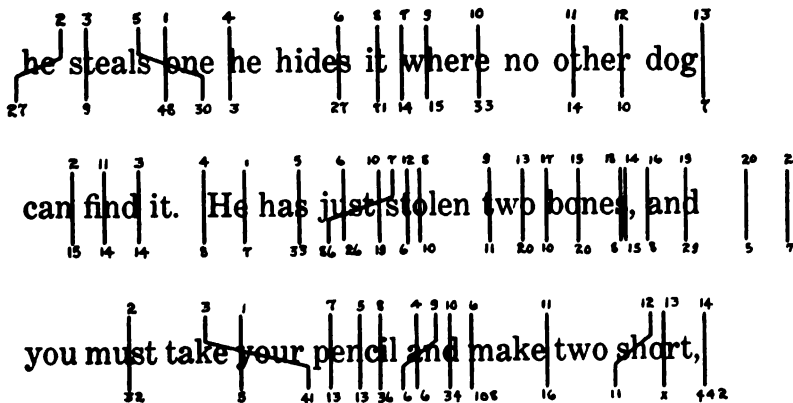
from the end of one line to the beginning of the next. The extent of his deficiencies are revealed in Table LIV.

TABLE LIV

ITEMS	ORAL READING		SILENT READING	
	D. H.'s Record	Third-Grade Standards	D. H.'s Record	Third-Grade Standards
Average number of fixations per line	13.6	10.4	16	8.9
Average duration of fixations.....	85.4	10.1	16.2	7.9
Average number of regressive movements per line.....	2.4	1.8	4.7	1.8

The entries in the table show that he made more fixations and regressive movements per line in both oral and silent reading than the average pupils of his grade and that the number of fixations and regressive movements was larger in silent reading than in oral. The most striking fact revealed by the table was the very long duration of

PLATE X



fixations, particularly in oral reading. This was due in part to several very long fixation periods.

Informal tests of comprehension showed that he was able to reproduce what he read and to answer thought-provoking questions about the content of passages in which he encountered few recognition difficulties. He was able to interpret more difficult passages satisfactorily after errors in recognition had been corrected. In a specific exercise, he read aloud two paragraphs of a selection and made a reproduction score of



38. He read the next two paragraphs silently and made a score of only 19, which indicated that he probably omitted words in his reading when he was not required to pronounce them. When two other paragraphs of similar difficulty were read to him, he made a reproduction score of 70. This high score suggested that when he was freed from the responsibilities of recognition he was able to interpret the meaning of simple passages very effectively. In other tests, he answered thought-provoking questions intelligently when he was not handicapped by difficulties in recognition. All these facts indicated quite clearly that his difficulties in the mechanics of reading were more serious than, and largely responsible for, his difficulties in interpretation.

*Summary of diagnosis.*—The diagnosis showed that D. H.'s mental age was one and one-half years below his chronological age. He was retarded in oral-reading accomplishment for several important reasons: (a) he failed to recognize the details of words accurately; (b) he did not associate sounds and printed symbols readily; (c) his fixations were unusually long; and (d) he recognized isolated words rather than groups of words at each fixation. His rate of silent reading was very slow because of word difficulties and a narrow span of recognition. His weakness in the interpretation of simple passages was due almost wholly to difficulties in recognition. His inability to interpret difficult passages was attributed to inability to recognize words and to ineffective habits of thinking while reading.

*Remedial instruction.*—The primary purpose of remedial instruction was to overcome his difficulties in the mechanics of reading. This included the development of ability to recognize words independently, increasing the rapidity of recognition, and increasing his span of recognition. A secondary purpose of remedial instruction, although a very important one, was the development of more effective habits of interpretation which included stimulating a thoughtful reading attitude and the habit of thinking independently about the content of what he read. In order to accomplish these purposes, he was given individual instruction for twenty-five minutes each day. The greater part of the time was devoted to reading a large amount of simple material in order to establish correct reading habits. Attention was given to the content at all times in order to encourage habits of thoughtful reading and to aid in recognition. A part of the period each day was devoted to drill exercises to overcome specific difficulties in the mechanics of reading.

*Stimulating an interest in reading.*—The first steps in remedial instruction aimed to create a desire, on his part, to read and to stimu-

late an interest in his progress. He enjoyed hearing stories but was not eager to read them for himself. His favorite stories were selected from the readers which he knew and, if possible, simpler versions of these stories were found in other readers. The teacher read the more difficult parts to him and he was asked to read the easier parts. He became interested in finding out how a story differed from the one he knew, and frequently wanted to discuss both of them and to tell which one he liked better. When the stories appeared in dialogue form, he and the teacher took different parts. This device never failed to interest him and he tried very hard to read well. In addition to the familiar stories referred to, interesting stories were selected from primers and first readers which he did not know. His interest was aroused through the pictures or through comments about the stories. Because they were simple, he could read them fluently and he gained confidence in his ability. Whenever improvement was noted he was complimented and encouraged.

He soon became interested in the books on the reading table and he looked at the pictures. He often remarked, "I think this story would be interesting because the pictures are so funny." He was permitted to choose one or two stories in this way each day. If they were too difficult for him to read alone, the harder parts were read to him or he was permitted to take them home for his mother to read to him. In the case of very difficult stories which he selected, he was advised to postpone reading them until later. He soon formed the habit of coming early in order that he might have more time to look through the books and to read the easier stories silently. A story was sometimes begun at school and when he was sufficiently interested he took the book home to finish it. After he had made considerable progress in reading, he became interested in *A Child's Robinson Crusoe* written by Nida. The first chapter was read to him and he was told a part of the story. A few minutes of each period for several days were spent in reading a new chapter. He then took the book home to finish. He brought it back occasionally to read a chapter or to tell what he had read. Answers to questions about the content revealed the fact that he was interpreting satisfactorily what he read. His mother reported that he got up early each morning until he finished the book in order to read an hour before breakfast. He soon did a great deal of outside reading and frequently remarked, "I like to read now."

*Overcoming difficulties in the mechanics of reading: (a) By using content as an aid in recognition.*—The use of familiar selections, as

described above, enabled him to give detailed attention both to the content and to the accuracy of his reading. When a new selection was assigned, he was asked to read it silently first and his attention was directed to the content in order that he might read it aloud more accurately and fluently. When he was asked later to read passages at sight, the thought units were prefaced by questions and suggestions. The words which caused difficulty were used in sentences on the board as a means of helping him to recognize them in context.

(b) *By developing ability to recognize words independently.*—Although exercises in recognizing words in context were very helpful, additional instruction was necessary before he was able to recognize the details of words. He confused words beginning with *m* and *n* and often substituted one word for another, if it completed the meaning of the sentence satisfactorily. A word causing difficulty was written on the board together with others containing a given element. Initial consonant sounds, vowel sounds combined with consonants, vowel digraphs, and consonant blends were studied. In his case, phonetics served as a very helpful tool and enabled him to make the correct association between sounds and their symbols. Later he was given simple rules which assisted him in determining when vowels should be long or short. When he encountered unfamiliar words and pronounced them correctly, he frequently made a remark such as, "I knew that word was *coach* because I remembered that when there are two vowels the first one is long and the second one is silent."

(c) *By increasing his rapidity of recognition and enlarging his span of recognition.*—As he gained in ability to recognize words independently, his rate of recognition increased. To overcome his tendency to read one word at a time and to decrease the length of the period of fixation, he was given exercises to increase his span of accurate recognition. Furthermore, sentences which he read poorly were written on the board and he was shown which words belonged together. They were then read to him and the phrasing was emphasized; for example, The little dog had a bone. He was then asked to read the sentence rapidly and put the words together in appropriate groups. Through imitation and suggestions, he soon learned to group words more accurately. Whenever he began to read one word at a time and to hesitate while reading, the teacher read several paragraphs to him. He was usually able to read more rapidly and to group words better after hearing the teacher read.

Some attention was given also to establishing more accurate return sweeps of the eyes from the end of one line to the beginning of the next.

Selections from primers were used for this purpose because the lines were short and farther apart than in other books. He was encouraged to read to the end of the line and then to make the return sweep quickly to the first word in the next line and to read on without repeating. He was asked to re-read passages until he was thoroughly familiar with them and could make the return sweep without error. The use of a marker for a few days frequently proved of great value.

*Developing more effective habits of interpretation.*—It was found that he had little difficulty in interpreting simple selections. When more difficult passages were assigned for silent reading, emphasis was placed on interpretation. Thought-provoking questions were asked to stimulate independent thinking and his attention was directed to the content in all reading exercises.

*Results.*—The tests were given again at the end of eleven weeks of training. His preliminary scores, his December scores, and the standard scores for his grade are included in Table LV.

TABLE LV

Tests	October Scores	December Scores	Standard Third-Grade Scores
The Gray Oral Reading Test.....	36.25	43.75	46
The Burgess Silent Reading Test.....	26	44	50
The Courtis Silent Reading Test:			
Rate.....	79	47	113
Comprehension.....	61	80	78
The Haggerty Reading Examination,			
Sigma I:			
Test I.....	11	18	16
Test II.....	8	17	14

The scores indicate that he had made considerable progress in all phases of reading except rate of silent reading. His score in oral reading closely approximated the standard for his grade. His comprehension scores in the Haggerty and the Courtis tests were slightly above the standard scores. His unsatisfactory score in rate of silent reading can be explained by the fact that the training which he had received in accurate recognition had made him conscious of word difficulties. Consequently, he paused frequently to determine the pronunciation of unfamiliar words. It is apparent that additional training was necessary to increase his rate of silent reading.

## CASE U

A FOURTH-GRADE GIRL WHO WAS GREATLY RETARDED IN ORAL READING AND SOMEWHAT RETARDED IN INTERPRETATION BECAUSE OF LACK OF INTEREST AND A CARELESS, INDIFFERENT ATTITUDE TOWARD READING

*Introductory statement.*—In November, 1921, G. S. was ten years old. She was somewhat above the average in weight and was slow and deliberate. She had no physical defects which were likely to interfere with her progress in reading. She was well dressed, neat, and clean, and her home conditions were satisfactory. She was required to repeat the work of the third grade on account of absence due to scarlet fever. According to the report of her teachers, she had always been a disturbing element in a group, was irresponsible, and decidedly indifferent concerning her progress. Her work in all subjects, in the judgment of her teachers, was below the standard of which she was capable.

*Preliminary diagnosis.*—The tests named in Table LVI were used in the preliminary study of her case. The scores made by G. S. and the standard fourth-grade scores are also included.

TABLE LVI

Tests	G. S.'s Scores	Standard Fourth-Grade Scores
Illinois Intelligence Test.....	110	100
The Gray Oral Reading Test.....	23.75	47
The Burgess Silent Reading Test.....	34	50
The Courtis Silent Reading Test:		
Rate.....	137	145
Comprehension.....	61	89
The Monroe Silent Reading Test:		
Comprehension.....	11	12.7

The scores indicate that G. S. was above the average in general intelligence but below the standard for her grade in oral reading and in most phases of silent reading. A study of her oral-reading record showed that she read even the simplest passages slowly, haltingly, and inaccurately. Observations made while she was reading revealed the fact that she had not developed regular habits of eye-movements. She did not recognize words in thought groups, and she repeated frequently (*a*) to get the thought, (*b*) to group the words effectively, or (*c*) to correct mispronunciations. She inserted and omitted short words or parts of words, substituted one word for another, and totally mispronounced many simple words. Her errors in the more difficult

passages indicated that she had not grasped the thought. The number and character of her oral-reading errors in the simplest passages suggested that her difficulties in recognition, her inability to see words in thought groups, and her irregular eye-movements were sufficient to account for her low comprehension scores. However, a more detailed study of her reading habits was necessary before final conclusions could be reached in regard to the exact nature of her difficulty.

*Detailed diagnosis.*—Three tests were given to secure additional information concerning her difficulties in recognition. In Word Recognition Test A she made a score of 94. The words which she pronounced when errors were made were always similar in form to the printed words, frequently differing in only one letter. This indicated slight inaccuracies in recognizing the details of words. Few errors were made in Word Element Test A and these were corrected when she saw the words in simple sentences. Furthermore, she had no difficulty in giving other words containing the same phonetic elements. The short-exposure tests showed that several exposures were necessary before some of the letters and short phrases were recognized and that many exposures were necessary before the longer phrases were recognized. On the other hand, she recognized the two-, three-, and four-letter words fairly accurately. It was evident from these tests that she recognized short isolated words readily with few inaccuracies, that she had a fair mastery of simple phonetic elements, that she frequently mispronounced simple words when they appeared in phrases or sentences, and that her span of recognition was narrow.

Further evidence concerning her habits of recognition was secured from photographic records of her eye-movements. A section of her oral-reading record is reproduced in Plate XI.

Three significant facts were noted in a study of the record. (1) There was an unusual number of fixations. (2) The fixations did not occur in regular order from left to right. (3) There were periods of confusion as shown in the latter half of the first line. These characteristics are usually found in immature readers who have not mastered the mechanics of reading. Additional facts were secured by calculating the average number of fixations per line, the average duration of the fixations, and the average number of regressive movements per line in both oral and silent reading. A summary of these facts appears in Table LVII.

The facts presented in this table show that she made more fixations per line in both oral or silent reading and made longer fixations than

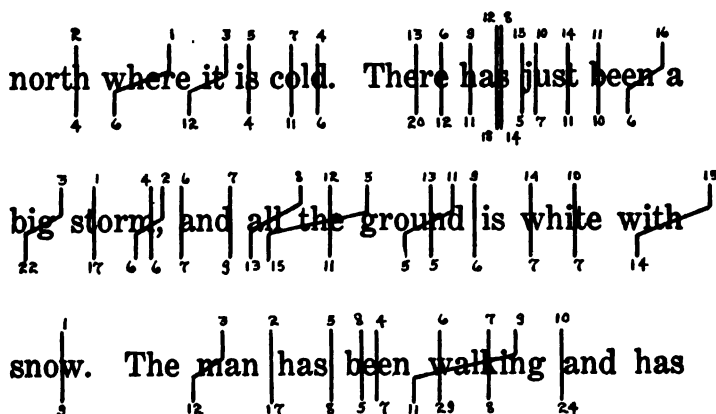
are usually made by fourth-grade pupils. These facts account in large measure for her slow rate of reading. In this connection it should be noted that her habits of recognition in silent reading were somewhat more effective than those in oral reading. The large number of fixations per line supplied further evidence of a narrow span of recognition.

TABLE LVII

ITEMS	ORAL READING		SILENT READING	
	G. S.'s Record	Fourth-Grade Standards	G. S.'s Record	Fourth-Grade Standards
Average number of fixations per line	15.6	10.3	11.4	7.3
Average durations of fixations.....	11.6	7.7	9.4	6.7
Average number of regressive movements per line.....	6	2	3.4	1.4

The most striking fact revealed by the eye-movement records was the large number of regressive movements. In general, these might have been due to word difficulties, to confusion arising from seeing several words together, or to careless habits of reading. Inasmuch as she did fairly well in Word Recognition Test A and recognized isolated

PLATE XI



words accurately in the short-exposure tests, it was concluded that difficulty in the recognition of individual words was probably not the entire explanation. Since it had been discovered in the short-exposure tests that she had difficulty in recognizing words in groups, it was

concluded that the cause of numerous regressive movements and poor accomplishment in the mechanics of reading could be attributed largely to a narrow span of accurate recognition.

In searching for additional explanations for her difficulties in recognition, it was found that she had a careless, indifferent attitude toward reading. On the first day on which the informal tests were given, she stated frankly that she disliked reading and always had. This attitude affected her accuracy in oral reading. When words were mispronounced and her attention was called to the errors, she was able to correct them without additional help. An examination of her eyes showed that they were normal. It was concluded, therefore, that many of her inaccuracies in the recognition of simple words were due largely to carelessness.

A careful study was next made of her test papers in silent reading to secure additional information concerning her habits of interpretation. She scored lowest in the Burgess test in which success depends on accurate reading at a fairly rapid rate. She also scored quite low in the Courtis test in which success depends on "grasping the essential points in their essential relations." In informal tests of a similar type, she read carelessly and was satisfied with incomplete interpretation. It became evident, therefore, that she did not direct her attention effectively to the content of what she read.

A part of her difficulty in interpretation was due to her attitude toward the content. Evidence for this statement was secured by asking her to reproduce what she had read when she did not know while reading that she was going to be held for the content. In such cases her reproductions were wholly inadequate and questions failed to reveal a satisfactory mastery of the content. On the other hand, if she was informed that a reproduction would be required, she was able to reproduce as much as 65 per cent of what she read. Other tests showed that when she was given specific questions to direct her thinking while reading, she could select the most important points and could answer thought-provoking questions, provided the selections were relatively simple. If the selections were difficult, she was not able to interpret them accurately because of evident difficulties in recognition.

*Summary of diagnosis.*—The diagnosis showed that G. S., who was somewhat above the average for her grade in intelligence, was distinctly retarded in oral reading and was somewhat below average in rate and comprehension in silent reading. Her weakness in oral reading was due to inaccurate recognition of simple words in groups, to a narrow span



of recognition, and to very irregular eye-movements. The most significant explanation of her difficulties in both recognition and interpretation was her lack of interest in reading and her careless, indifferent attitude toward it. This had resulted in immature, ineffective habits of reading and in failure to direct attention to the content of what she read.

*Remedial instruction.*—It was evident from the facts secured in the diagnosis that remedial instruction should aim (a) to stimulate keen interest in reading through the use of simple, well-selected stories, (b) to develop a feeling of responsibility for careful, accurate work, (c) to overcome fundamental difficulties in the mechanics of reading by means of exercises to promote accuracy of recognition, to increase the span of recognition, and to develop regular habits of eye-movements, and (d) to improve the accuracy and thoroughness of her interpretation by exercises calculated to stimulate her interest and to develop habits of good thinking while reading.

G. S. was given individual instruction for twenty-five minutes each day. At first the period was divided as follows: (a) oral reading of prepared selections, (b) sight reading of simple material, and (c) drill exercises of various types to overcome her difficulties in the mechanics of reading. At all times, intelligent interpretation was considered of primary importance and was used as an aid in recognition. After she had made considerable progress in the mechanics of reading, a large amount of silent reading was assigned. The methods which were used in overcoming her difficulties in both oral and silent reading are described in the following paragraphs.

*Stimulating interest in reading.*—Because much of her difficulty was due to a positive dislike for reading and to careless habits, it was necessary to arouse an interest in reading before real progress could be made. She was not interested in the content of simple selections which she could read successfully and she was unwilling to read them for the purpose of overcoming her difficulties. In fact, she resented being asked to read selections contained in first or second readers. When other material was assigned she was indifferent and made no attempt to read well. In order to provide simple material and to avoid using books labeled as first or second readers she was given selections cut from books which she had never seen. These were mounted on cardboard to preserve them and to make them easy to handle. The cards were then fastened together, making a separate booklet of each story. As soon as progress had been made with simple passages she was assigned selections in ungraded readers. She later expressed a preference for long stories and

was given *Reynard the Fox* written for children by Smythe. This was simple enough to enable her to read fluently. The fact that it was an entire book interested her.

Suitable and attractive books were kept on the reading table and although she looked through them daily, she did not express a desire to take one for several weeks. While looking at them she was often told what they were about or which ones certain children preferred. One day she seemed especially interested in Nida's *Ab the Cave Man*. The first chapter was read to her. In the next few chapters she read the easier parts and the teacher read the remaining sections. At the end of the period she was told she might take the book home. The next day she announced that she had read about fifteen pages and she seemed interested. A few minutes of each period for a few days were devoted to discussions of the parts she liked best, to reading an occasional chapter aloud, or to reading new chapters. She soon finished the book and asked for another. This was the beginning of her first real interest in reading and although her progress had been slow, it was much more noticeable thereafter. Her brother, who was younger, became interested in the books she took home. He could read more rapidly than she and he aroused her curiosity by telling her what was to come. This kept her in a state of expectancy and caused her to read more rapidly and with keener interest. In this way she learned that reading provided very interesting experiences and she was willing to receive help in class in order to learn to read more difficult books for herself.

*Developing a feeling of responsibility for careful work.*—Satisfactory work was commented upon and careless work was not accepted. Progress was secured by telling her that it was easy to understand a certain story because she read it accurately or that the meaning of another story was not clear to the listener because she left out words, repeated frequently, and miscalled words. In such cases she was asked to re-read a selection to secure improvement along one or more of these lines. A record was frequently made of her errors. These facts were used in describing to her the progress she was making. Occasionally she was shown test sheets on which the number of errors, types of errors, and the time it took to read each paragraph were recorded. She became interested in her progress and made an effort to improve but failed to develop a feeling of responsibility until near the end of the period of instruction.

*Overcoming difficulties in the mechanics of reading: (a) By developing accurate recognition.*—In order to minimize the difficulties in recognition

and to encourage habits of fluent reading, very simple selections were used. She was usually asked first to read short units silently with her attention directed to the content. This enabled her to read aloud more accurately. Since she had little difficulty in the recognition of isolated words, the big problem was to hold her to the accurate recognition of words in sentences. If she was asked to read a selection at sight, a suggestion as to the content of the next paragraph often resulted in thoughtful reading and fewer errors. When she read unsatisfactorily she was asked to re-read after definite suggestions for improvement had been made; for example, "Make it clear how many children went to the party," or "You left out three short words in the sentence that changed the meaning. Read it again and put them in." Many of her errors were due to carelessness and when she found that she would be required to re-read paragraphs which she read carelessly, she made greater effort to read them accurately the first time. Dialogues or plays in which she and the teacher read different parts also brought satisfactory results. She attempted to read as accurately and as fluently as the teacher in order to make her part interesting. As a result she improved through imitation and a strong incentive. She continued to study simple material until she could read it fluently. The difficulty of the material was then gradually increased.

(b) *By developing effective eye-movements.*—One of her most noticeable difficulties in daily reading exercises was her inability to pass from the end of one line to the beginning of the next. Her eyes either returned to the same line or skipped a line. In order to overcome this tendency a number of short stories were typewritten with the lines more widely separated than in ordinary print; wide spaces were also left between the words. After using these exercises for some time she made the return sweep more successfully. She also had the habit of making the return sweep before she pronounced a sufficient number of words in a given line. She had doubtless recognized the words at the end of the line but before she could pronounce them or because she was confused in finding the beginning of the next line she forgot them and had to re-read. She was encouraged to use a marker for a short time in order to keep the next line covered until she had almost completed reading a given line. This prevented repetitions at the end of the line, kept her attention on a given line, enabled her to begin the next line successfully, and resulted in fewer errors.

(c) *By increasing the span of recognition.*—Paragraphs were read to her in which phrasing was emphasized. A pencil was drawn quickly

under groups of words to enable her to see what words belonged together. Short phrases which caused difficulty or which occurred frequently in selections were printed on cards and were used in quick-perception drills. She was given two-word phrases at first, such as *he said*, *there were*, and *one day*. Later she was given three- and four-word phrases and short sentences.

*Improving interpretation.*—After reading selections aloud she was encouraged to discuss them and to express her opinion about the content. She was assigned definite things to look for while reading or was given lists of questions which directed her attention to the content and which encouraged her to think independently about it. For example: "Which word tells what kind of a girl she was?" "Do you agree with what the boy said?" "Why?" Because of her difficulties with the mechanics of reading she was more successful in answering judgment questions than those which called for specific facts contained in the passages.

*Results.*—The instruction was continued for a period of eleven weeks. At the end of the period she was given the tests again. The results of these tests, the scores which she made before the training began, and the standard scores for her grade are included in Table LVIII.

TABLE LVIII

Tests	Before Training	After Training	Standard Fourth-Grade Scores
The Gray Oral Reading Test.....	23.75	40	47
The Burgess Silent Reading Test.....	34	68	50
The Courtis Silent Reading Test:			
Rate.....	137	193	145
Comprehension.....	61	83.3	89
The Monroe Silent Reading Test:			
Comprehension.....	11	15.2	12.7

The scores indicate that she had made considerable progress in oral reading but was not yet up to the standard for her grade. Her scores in the Burgess and the Monroe tests were somewhat above the standard scores. On the other hand, she was below standard in comprehension in the Courtis test due no doubt to the fact that she read too rapidly, as indicated by her high-rate score. Additional training in the mechanics of reading and in the interpretation of passages which required clear thinking was still necessary.

## CASE V

A FIFTH-GRADE BOY WHO WAS RETARDED IN ALL PHASES OF READING BECAUSE OF POOR LANGUAGE HABITS, LACK OF INTEREST IN READING, CARELESS HABITS OF WORK, AND POOR HABITS OF THINKING WHILE READING

*Introductory statement.*—J. E. was twelve years old when the study of his case began in October, 1921. His parents were foreign born and he heard little English spoken in the home. His own use of English was very poor and he had difficulty in pronouncing words containing *th*, *w*, and *v*. His teachers reported that he was below the average for his grade in most subjects. He was not interested in his progress in school and acknowledged that he had always disliked reading and had read very little outside of school. He had few books and no magazines at home, and his parents read nothing except foreign newspapers. He went to the picture show almost every night and worked as a delivery boy one or two evenings each week.

*Preliminary diagnosis.*—A study of his case was made through the use of five standardized tests. The names of the tests, J. E.'s scores, and the standard fifth-grade scores appear in Table LIX.

TABLE LIX

Tests	J. E.'s Scores	Standard Fifth-Grade Scores
The Illinois Intelligence Test.....	76	100
The Gray Oral Reading Test.....	28.75	48
The Burgess Silent Reading Test.....	32	50
The Courtis Silent Reading Test:		
Rate.....	99	168
Comprehension.....	77	93
The Monroe Silent Reading Test:		
Comprehension.....	11	17.8

The scores indicate that he was distinctly below the average for his grade in general intelligence and in all phases of reading. An examination of his oral-reading record showed that he read slowly and very inaccurately. His major difficulties in the simple passages were (a) repetitions, (b) numerous substitutions of such words as *so* for *as* and *this* for *it*, which did not change the meaning materially, (c) occasional substitutions of such words as *home* for *own* which showed that he did not have the content of the passage clearly in mind, (d) slight errors in the pronunciation of such words as *makes* for *made*, *puts* for *put*, and

*mass* for *masses*, and (e) omissions and insertions of short words. In more difficult passages, he was frequently unable to pronounce polysyllabic words.

His difficulties in recognition were doubtless sufficient to account, in part, for his slow rate of silent reading and to interfere to some extent with accurate interpretation. However, inasmuch as the passages used in some of the silent-reading tests in which he scored noticeably low were very simple, the tentative conclusion was drawn that he had difficulties in interpretation independent of those in the mechanics of reading. In order to determine more fully the nature and extent of his weaknesses in both recognition and interpretation, a more detailed study of the case was made.

*Detailed diagnosis.*—In the Jones Vocabulary Test, he made a score of 95 on the sight list and 96 on the phonetic list. These scores indicated that he recognized simple isolated words with a fair degree of accuracy. On the other hand, several informal tests in oral reading showed that he failed to recognize words in context which he recognized accurately when they were isolated. It was very clear that many of these inaccuracies were due to carelessness. When cautioned to read carefully he did noticeably better. When told that he had made three mistakes in a sentence he usually re-read it correctly.

Other significant facts were revealed by informal tests. He read very haltingly, recognizing one word at each fixation. Owing to language difficulties he was able to recognize words individually more rapidly than he was able to pronounce them. In his effort to read fluently, he made many errors. For example, he reversed the order of words or substituted words in sentences, as *I shall stay here right* for *I shall stay right here*, or *rode me on my back* for *rode upon my back*, or *This is not a safety place* for *This is not a safe place*. Another characteristic of his reading was that most of his errors in recognizing words were on the final letters of syllables. For example, he read *pussy* for *puss*, *hurry* for *hurrah*, and *come* for *coming*. This seemed to be due to the fact that he saw the beginning of the word and guessed at the ending.

Informal tests of comprehension showed that difficulties in recognition interfered to some extent with accurate interpretation. He was first asked to read two simple paragraphs orally. He then read the next two paragraphs silently. Finally two paragraphs were read to him. His reproduction scores were 47, 38, and 61, respectively. These and other similar results indicated clearly that when he was freed from the obligations of recognition, he was able to understand the content

of passages much better. In still other tests it was found that he was unable to answer thought-provoking questions or to think independently about the content of passages which he could reproduce in detail. He was seriously handicapped in the interpretation of relatively difficult passages by his narrow background of experience, his limited meaning vocabulary, and his inability to think clearly.

*Summary of diagnosis.*—The diagnosis showed that J. E. was below normal in general mental ability and was considerably retarded in all phases of reading. His oral reading was very poor because of inadequate language habits, inability to recognize familiar words in groups, inaccuracies in the recognition of unfamiliar words, and carelessness due to lack of interest in reading. His rate of silent reading was considerably below standard because of difficulties in recognizing words, a narrow span of recognition, and lack of experience in reading. His interpretation of what he read was poor because of low native intelligence, a limited background of experience, a small meaning of vocabulary, and poor habits of thinking while reading. His difficulties in the mechanics of reading also accentuated his difficulties in interpretation.

*Remedial instruction.*—The facts brought out in the diagnosis led to the conclusion that remedial instruction should attempt to accomplish the following purposes: (a) to stimulate an interest in reading and a pride in doing his best; (b) to develop greater fluency and accuracy in the use of English; (c) to overcome difficulties in the mechanics of reading including difficulties in recognition, a narrow span of recognition, ineffective grouping in oral reading, and a slow rate of silent reading; and (d) to increase his power of interpretation by directing his attention to the content and by stimulating good habits of thinking while reading. In order to accomplish these aims, he was given individual instruction for twenty-five minutes each day.

*Stimulating an interest in reading.*—Most of the time during the first few days was spent in informal discussions in order to study his case more carefully and to discover his interests. He talked freely whenever given an opportunity but his chief topics of conversation were moving-pictures and the games which he played on the street. He said he did not read because he failed to find interesting stories. He remarked one day that he "might" like to read stories about horses or dogs if he could find them. The library was searched for suitable selections. Several stories were read to him at first. When he became interested, the teacher read the difficult parts to him and he was asked to read the simpler passages. He was delighted with "A Story Told by a Donkey"

in the *Winston Second Reader*. It was started one day near the end of the period and he came early the following day, found the book, and read part of it himself. He was later given simple editions of *Black Beauty* and *The Dog of Flanders*. The more difficult parts were read to him. Many stories about dogs and horses which interested him were found in readers and story-books. Other animal stories were assigned later. He was keenly interested in them and it was some time before he wanted to read about other things.

After he had read several stories which were suggested to him, he became interested in looking through the books on the reading table and was finally attracted by the pictures in *Ab the Cave Man*, especially the one showing how Ab killed the tiger. The book was begun in class and for the first time he expressed a desire to take a book home. He came back the following day very much excited over the story. He finished the book in a few days and said he would take another if it was interesting. *Robinson Crusoe* was suggested. He liked this book even better and read at home each evening. He found that the story of *Robinson Crusoe* was being shown at a moving-picture theater; he went to see it, and he sat up late to complete the book. He read *Gulliver's Travels* (Baldwin's edition), other books of adventure, and short stories of various types before the end of the training period. He occasionally remarked, "I used to hate reading but now I like it."

*Developing greater fluency and accuracy in the use of English.*—During informal conversation periods, opportunity was taken to supply suitable words when he hesitated in talking, to pronounce words correctly when he had difficulty, and to correct errors in sentence structure. He was frequently asked to reproduce stories which he had read for practice in expressing himself freely. Questions were asked to direct his attention to the main points and to aid him in telling them in correct sequence. He was given definite suggestions for improving these reproductions and the teacher occasionally told the stories to him. He was also given help in pronouncing words which caused difficulty. The reading of a large amount of carefully selected material increased his background of experience, enlarged his speaking and meaning vocabularies, and supplied him with something interesting to talk about. After considerable progress had been made, he frequently corrected his own errors.

*Overcoming difficulties in the mechanics of reading:* (a) *By increasing his accuracy of recognition.*—The first remedial steps aimed to direct his attention to the content, to check his rate of reading, and to hold



him responsible for accurate recognition. He was assigned very simple selections during the first few weeks. He was frequently asked to read these selections silently. The content was then discussed in order to insure accurate interpretation and he was finally asked to read them aloud accurately. If he made careless errors, he was asked to re-read. Such questions as "How far did the boy go?" or "How large was the boy?" sometimes enabled him to correct his errors without additional help. When he read selections at sight, questions or suggestions were given from time to time to direct his attention to the content. In such cases he was usually able to read with a fair degree of accuracy.

Words which caused difficulty during the reading exercises were used in sentences at the end of the period. He frequently made substitutions, such as *run* for *ran* and *most* for *must*, because he did not recognize the details of words accurately. Such words were first used in sentences and then printed on cards and used in quick-perception drills. Sometimes two similar words were presented together in order that he might note their similarities and differences. Furthermore, he repeatedly omitted or changed the ending of a word because he looked at only the beginning. In order to overcome this difficulty, he was encouraged to look at the entire word before attempting to pronounce it. Such endings as *ly*, *ive*, *ing*, *ful*, and *er* were also given special attention.

(b) *By increasing his span of accurate recognition.*—His greatest difficulty in recognition was his inability to recognize groups of words accurately. In addition to the help which was given to make him independent in the recognition of individual words, quick-perception exercises were given each day to increase his span of recognition. A record of his errors was kept for several weeks and he became interested in decreasing the number each day. He entered a contest with a boy who had the same difficulty and although they did not work together they compared scores daily.

(c) *By developing ability in effective grouping.*—During reading exercises he was encouraged to read words in thought groups. Satisfactory results were frequently secured by directing his attention to the content. Phrases were occasionally underlined in sentences on the blackboard or indicated in a reader by passing a pencil rapidly under the words which belonged together. When he read haltingly, recognizing only one word at a time, a few paragraphs were read to him as he followed the lines with his eyes, and effective grouping was emphasized. After hearing passages read, he usually re-read them better and proceeded with greater fluency.

(d) *By increasing his rate of silent reading.*—As he gained in accuracy and in span of recognition, his rate of reading increased. Near the end of the period of training emphasis was placed on rapid silent reading. He was encouraged to read as rapidly as he could interpret. The silent reading which he did outside of class also gave a large amount of practice in rapid reading.

*Increasing his power of interpretation.*—His attention was directed to the content, and accurate interpretation was required at all times. Selections were discussed at length, thought-provoking questions were asked, and passages of a problematic nature were assigned to encourage independent thinking. By stimulating his interest in reading, extending his experience, and enlarging his meaning vocabulary, his power of interpretation increased noticeably.

*Results.*—He was given the tests again after eleven weeks of training. The scores which he made before training, his December scores, and the standard scores for his grade are included in Table LX.

TABLE LX

Tests	October Scores	December Scores	Standard Fifth-Grade Scores
The Gray Oral Reading Test.....	28.75	33.75	48
The Burgess Silent Reading Test.....	32	38	50
The Courtis Silent Reading Test:			
Rate.....	99	114	168
Comprehension.....	77	91	93
The Monroe Silent Reading Test:			
Comprehension.....	11	13.3	17.8

The scores indicate that he had made progress in all phases of reading but that he was not yet up to the standard for his grade. It was evident that additional training in all phases of reading could be continued to distinct advantage. Because of the large number of ineffective reading habits which he had acquired, it was concluded that a much longer period of remedial training than is usual would be required to develop effective habits.

## SUMMARY OF CAUSES

Difficulties in practically all phases of reading are due to a wide variety of causes. Those which were of most significance in the cases reported in this chapter may be summarized briefly as follows: (a) low native intelligence, inadequate language habits, and lack of general experience; (b) little or no interest in reading, a careless, indifferent

attitude toward school work, and ineffective attention and application; (c) inadequate attention to the content, difficulties in the mechanics of reading, ineffective rates of reading, an inadequate meaning vocabulary, failure to think independently about the content, and inability to picture unfamiliar situations; (d) poor home environment, distracting social influences, and inadequate parental supervision; and (e) inadequate or inappropriate reading materials and poor instruction. The list is a relatively long one and includes many of the causes mentioned in earlier chapters. It is apparent that the teacher who attempts to determine the causes of failure in an individual case must canvass various possible explanations systematically before reaching final conclusions and planning remedial instruction.

*Conclusions concerning remedial instruction.*—The following specific suggestions concerning remedial instruction are based on the study of cases reported in this chapter. (1) Individual instruction is preferable. (2) The confidence and co-operation of the pupil must be secured. (3) Keen interest must be aroused in reading through the use of material directly related to the pupil's interests. (4) The first selections must be simple enough to enable the pupil to read with a fair degree of success. (5) Specific problems should be assigned to direct his attention to the important points. (6) These problems should increase in difficulty as his power of interpretation develops. (7) The problems which are assigned must vary in order to include all important phases of interpretation. (8) In connection with training in interpretation, he must be given exercises to promote rapid and accurate recognition of individual words and words in groups. (9) Drill exercises to increase his span of recognition and to establish regular eye-movements should also be given. (10) Exercises must be included to assist the pupil in reading rapidly as well as thoughtfully. (11) As soon as the pupil has made some progress in accurate interpretation and in the mechanics of reading, he should be assigned types of exercises which require independent thinking. (12) He should also be encouraged to read as much as possible outside of class in order to secure a large amount of practice in reading which is necessary in establishing fluent habits. (13) Remedial instruction should not be discontinued until pupils have substituted good habits for poor ones in all phases of reading and can read content subjects rapidly, intelligently, and independently.

Remedial instruction for pupils who are weak in most phases of reading must be both comprehensive and specific. A well-balanced program should be adopted which provides adequate training in each

phase in which weakness is discovered. As a rule, training should be carried on simultaneously along all lines, although major emphasis may be placed at any time on a given phase in which serious difficulty is encountered. As training continues, the most important need of a pupil may change and the emphasis in instruction must be shifted. For example, a pupil who is weak in all phases of reading may need first of all exercises which direct his attention to the content in order to aid him in both interpretation and recognition. As he overcomes his difficulties in the interpretation of simple passages, it may be necessary to emphasize in turn each of the following: the interpretation of passages of a problematic type, increasing his rate of silent reading, or developing independence in the recognition of polysyllabic words. The remedial teacher must study the pupil's needs continuously, and must supplement a well-balanced program of reading instruction with specific emphasis from time to time on particular phases of reading which require immediate attention.

## CHAPTER IX

### DIAGNOSTIC AND REMEDIAL STUDIES IN A CITY SCHOOL SYSTEM

The purpose of this chapter is to describe briefly the diagnostic and remedial studies which were made by the supervisors and teachers of Toledo, Ohio. Discussions of the methods which were used and of the results which were secured should prove of value to superintendents, principals, supervisors, and teachers who plan to provide appropriate instruction for pupils who encounter serious difficulties in reading. The plan which was adopted by the supervisors of Toledo was determined by the conditions which existed in the autumn of 1921 in the schools of that city. Many schools which undertake diagnostic and remedial work will doubtless find it necessary to depart widely from the Toledo plan. As other methods of providing for remedial cases are worked out, they should be published in order that each school officer may profit by the experiences of those who have engaged in this type of work.

#### ORGANIZATION OF DIAGNOSTIC WORK IN TOLEDO

In the autumn of 1921, Superintendent Charles S. Meek interested the teachers under his supervision in making a series of diagnostic and remedial studies in reading. He was assisted in this enterprise by Miss Estaline Wilson, assistant superintendent of schools, Miss Florence E. Hawkins, primary supervisor, and Miss Flora Nettleman, intermediate grade supervisor. Ten schools were selected in which to begin remedial instruction. These schools were chosen because each of them had in its organization a special teacher who gave individual help to pupils who encountered serious difficulties in any of the school subjects. The principal of each school was asked to select three pupils who were seriously retarded in reading. The thirty pupils selected in this way were studied very carefully during the month of December for the purpose of determining the nature of their difficulties.

The first step in the diagnosis was to secure information concerning each pupil with respect to the following: home conditions, personal characteristics, school history, progress in various school subjects, and special difficulties in reading. In this connection, the classroom teachers used the personal history blanks which were described in chapter iii. Numerous items of information were secured which proved

to be of great value in explaining the cause of failure in many cases. Inasmuch as mental tests had been given a short time before the diagnostic studies began, information concerning the general intelligence of each pupil was secured from the record sheets that were on file.

The testing which formed a very important step in the diagnosis was carried on during the week of December 12. The names of the tests that were used follow: the Gray Oral Reading Test; the Haggerty Reading Examination, Sigma I; the Courtis Silent Reading Test, No. 2; the Thorndike-McCall Silent Reading Test; the Burgess Silent Reading Test; Word Recognition Test A; Word Element Test A; and the short-exposure tests that were described in chapter iii.

The tests were given by Miss Wilson, Miss Hawkins, Miss Nettleman, Mrs. William S. Gray, and the writer. They were assisted in each school by the special teacher who was to give the remedial instruction. A morning or an afternoon was devoted to the study of the pupils of each school. As far as was possible, principles determining the valid administration of tests were observed. In several schools as many as ten pupils in addition to the three special cases were tested in order to secure comparative data. As far as time permitted, summaries of the diagnoses were prepared and recommendations for remedial treatment were outlined before leaving a building. In several cases it was necessary to postpone the preparation of the reports until the close of the day. The summary of the diagnosis and the recommendations concerning remedial instruction which were included in one report follow:

This is the case of a boy who is somewhat retarded in comprehension, who makes numerous minor errors in oral reading, and who encounters difficulty in the accurate recognition of polysyllabic words. He reads simple material very rapidly when he is not held for the content. When asked to interpret what he reads, he reads much more slowly. Although he has a fairly wide span of recognition, he does not recognize details accurately.

It is recommended that two weeks be spent in oral reading of third-grade material for the purpose of eliminating minor errors and careless mistakes. Precede the oral reading by silent study and spirited discussions of the content. In order to improve the accuracy of his reading and the effectiveness of his expression read to him frequently.

As soon as he gains confidence, introduce more difficult selections. These should be studied silently for their content. Assign problems for him to solve which will require a very careful reading of the passages. The content should be discussed thoroughly to insure a mastery of the essential points. When word difficulties are encountered teach him to secure the meaning and pronunciation from a study of the context. Considerable attention should

be given to the analysis of polysyllabic words. Plan drill exercises on the words which cause difficulty. Teach the principles of syllabication and accent through a study of examples.

Before asking him to read a difficult selection orally, give him an opportunity to practice reading it by himself. This will enable him to improve his grouping of words and the quality of his expression. It will be very helpful to read to him and with him by turns. Encourage him whenever possible. Provide audience situations for him.

Organize phrase drills to increase his span of accurate recognition. Begin with short phrases at first and increase their length as rapidly as progress is evidenced.

Prepare short exercises about fifty words in length for use in increasing his ability to interpret what he reads. Increase the length and difficulty of the passages as rapidly as progress is noted.

Conduct timed reading exercises frequently to increase his rate of accurate silent reading. In all such exercises attention should be centered on the content.

#### ORGANIZATION OF REMEDIAL INSTRUCTION

During the week in which the tests were given, a series of conferences were held with the teachers of Toledo concerning problems of reading instruction. These meetings were attended by the special teachers who were to give remedial instruction. In addition, a special conference was held with the supervisors and special teachers in which were discussed at length the problems of teaching pupils who are retarded in reading. Types of remedial cases were described and appropriate methods and devices of teaching them were considered. Before the close of the conference several typewritten sheets of directions and suggestions were distributed. Furthermore, the special teachers were supplied with reading tests of comparable difficulty which could be used at intervals of two weeks during the training period in determining the progress pupils were making.

Remedial instruction began the first week in January, 1922, and continued for nine weeks. During this time the special teachers and the supervisors met frequently to discuss the problems which confronted them and to pool their experiences. The following report was received concerning one of the meetings: "Each teacher discussed one of her cases. She gave the child's history, told what had been learned in the diagnosis, and outlined the recommendations for remedial treatment. She also described the steps which she had taken in teaching the pupil. The case was then discussed by the special teachers; questions were asked, and suggestions were offered by the supervisors and teachers."

The special teachers indicated in various ways that these conferences were exceedingly profitable.

Reports were prepared every two weeks by the special teachers and forwarded to the writer. They contained descriptions of the methods used by the teachers in teaching each of the remedial cases which had been assigned to them. In addition, the reports contained statements concerning the progress of the pupils and questions in regard to difficulties which the pupils encountered. As rapidly as the reports were received, criticisms and suggestions were prepared and returned to the teachers. These reports proved to be very helpful because they made it necessary for each teacher to make careful studies of the most significant difficulties encountered by individual pupils and the probable effectiveness of the methods which were used.

*Results of remedial instruction.*—Nine weeks after the remedial instruction began, check tests were given by Miss Wilson, Miss Hawkins, Miss Nettleman, and Miss Hinman, one of the special teachers. Of the thirty pupils who were originally selected, twenty-six had received remedial instruction throughout most of the training period. The check tests given to these pupils revealed some very interesting and significant results. The oral-reading tests showed that each pupil had made distinct progress. The silent-reading tests revealed satisfactory progress in many cases and unsatisfactory results in other cases. Inasmuch as this was the first group which had been given remedial instruction, it was natural to expect that the results would not be entirely satisfactory in every case. In order to overcome difficulties which some pupils encountered at the end of the training period, remedial instruction was continued in several cases.

It will not be possible to present the results for each of the twenty-six cases or to describe at length the methods which were used. The plan has been adopted, therefore, of making a brief summary of one case taught by each of the special teachers who were able to prepare final reports. Each grade from the second to the seventh inclusive is represented among the cases reported. The scores which were made at the beginning and at the end of the training period appear in Table LXI. The records of the pupils are arranged in the order in which the cases will be discussed in the following section of the chapter. A comparison of the scores shows clearly that each pupil made very satisfactory progress in most of the phases of reading which were tested. Many of the children were still considerably retarded in one or more respects when the March tests were given. In several cases, individual



instruction was continued for the purpose of eliminating errors and difficulties which the pupils encountered at that time.

TABLE LXI

PUPIL	SCHOOL	GRADE	TESTS												
			Gray's Oral		Burgess		Courtis						Thorndike-McCall		
							Rate		Questions and Answers		Index				
			Dec.	Mar.	Dec.	Mar.							Dec.	Mar.	Dec.
A. H.	Spring	II	0	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
M. M.	Newton	III	38	43	0	26	117	162	15	18	85	37	.....	20.5	
A. L.	Fulton	IV	30	45	26	20	108	104	0	19	0	64	.....	34	
N. W.	Cherry	V	31	34	20	26	07	183	10	29	57	74	.....	38	
T. C.	Auburndale	VI	35	45	0	26	77	110	23	25	95	01	.....	44	
A. F.	Gunckel	VI	18	20	21	26	120	80	20	26	82	82	.....	.....	
C. W.	Indiana	VII	20	54	14	26	117	114	30	33	96	90	.....	51	
P. M.	Stickney	VII	34	53	32	44	220	195	44	45	93	95	.....	54	

*Reports of individual cases.*—The eight cases which are reported do not represent a wide variety of different types. This is due to the fact that they were selected by the teachers and principals because they encountered serious difficulties in reading. As a rule such pupils are generally weak in both oral and silent reading. There are several important differences in the cases described which will be discussed in connection with the individual reports. A second explanation which should be made is that it was impossible because of the limitations of space to include all of the methods and devices used by each teacher. The plan was adopted, therefore, of presenting a few examples from each report. These will supply ample evidence of the fact that a large amount of very valuable material can be created in a school system if the necessary energy is provided for such work.

A. H.: A SECOND-GRADE BOY WHO ENCOUNTERED UNUSUAL DIFFICULTIES IN LEARNING TO READ

A. H. was unable to score in any of the reading tests. He failed to pronounce such words as *boy*, *dog*, and *ran*, and was unable to determine their pronunciation through word analysis. The study which was made of his case showed that he encountered serious difficulties in associating printed or written symbols with their meaning and pronunciation. Such cases are found in practically all schools. Their inability is known technically as dyslexia when it is due to failure of certain areas of the

brain to develop. There is no more baffling type of remedial case to instruct satisfactorily than pupils who encounter unusual difficulties in learning to read. The fact that Miss Latha Sipe, Spring School, secured approximately a year's progress in oral reading in nine weeks is very significant. The brief report which follows emphasizes the fact that teachers should study the needs and characteristics of remedial cases continuously, should plan reading exercises intelligently, and should teach each important habit and association deliberately and thoroughly.

Remedial instruction was organized to accomplish four distinct purposes: (a) to arouse interest in reading; (b) to develop independence in word recognition; (c) to secure effective grouping of words; and (d) to derive meaning and pronunciation from the context.

Thirty minutes were used each day for individual instruction. The first week was devoted to oral reading in order to develop interest in the reading of simple interesting selections. Beginning with the second week, the reading period was used for two types of instruction: (a) word analysis and flash-card exercises and (b) oral reading for content. In addition to these exercises, at least thirty minutes each day were spent in supplementary outside reading.

Instruction in word analysis was based on the words which caused difficulty. Minor errors, such as *house* for *home* and *that* for *what*, were printed on cards and presented in flash-card exercises. As rapidly as these words were mastered, they were removed from the pack of cards. Systematic instruction in phonics was given each day. It included drill on short vowels, long vowels, digraphs, family endings, initial consonants, and blends. Suffixes were also studied.

The last twenty minutes each day were used in reading simple, interesting stories. Mother Goose stories were read first. The teacher read or told a part of them to him. When he found that he was able to read the more familiar ones, he wanted to learn to read others. He watched the words closely as the teacher read and then took his book home and read the stories to himself several times. During the reading period, he was asked questions that helped him to anticipate what was coming. After discussing the answers to these questions, he was able to read much better. The Mother Goose stories were followed by stories such as "The Wee Wee Woman" and "The Old Woman and Her Pig." In a short time he became quite fluent in reading this type of material. After three weeks, he was able to read simple primer material silently.

The teacher read to him and with him in order to get good models of grouping and expression before him. At the end of four weeks, marked improvement was noted. His expression was better and he had developed ability in attacking new words and pronouncing them independently.

The discussion of a story insured a thoughtful reading attitude. This not only helped him to secure the meaning of passages but developed a desire

to read books. During the training period, he read fifteen supplementary reading books.

At the end of six weeks, he was transferred from a slow second-grade class to a more advanced section. He was the poorest member of the slow section when the remedial work began. Two weeks after his promotion he was ranked as "medium" in the new section.

**M. M.: A THIRD-GRADE BOY WHO WAS RETARDED MORE THAN A YEAR IN ALL PHASES OF READING AND WHO REVEALED ALL THE CHARACTERISTICS OF A WORD-READER**

The tests showed that M. M. was approximately equal to a beginning second-grade pupil in both recognition and interpretation. The most characteristic weakness which was revealed in his reading was the fact that he recognized words individually and failed to group them together in thought units. This interfered seriously with fluent oral reading and intelligent silent reading. As far as could be determined, this weakness was due to inability to recognize words rapidly and accurately and to a narrow span of recognition. Pupils who encounter similar difficulties are found in large numbers in every school system. It is needless to say that they present serious problems to classroom teachers. The report which follows describes the methods which Miss Marshall, Newton School, used in improving M. M.'s habits in three important phases. The specific exercises which are described were supplemented by much oral and silent reading for content with the result that distinct progress in most phases of reading was noted by the end of the training period.

The remedial work was organized with the following objectives in mind: (a) to develop independence in word recognition, (b) to develop the habit of recognizing words in thought units, and (c) to build up an adequate reading vocabulary.

Inasmuch as remedial instruction was given by the regular classroom teacher, it was necessary that M. M. should have clearly in mind the character of his difficulties. Consequently, nearly one-half of the time during the first month was devoted to a study of his difficulties and to appropriate methods of overcoming them.

He was handicapped in the beginning by the habit of guessing. The first step in remedying this difficulty was to require him to copy each word which caused difficulty. Inasmuch as he had previously received training in word analysis, the close attention to the details of words which was required in copying them led to their accurate recognition. The following series of suggestions was prepared to aid him in attacking new words: "Divide the word into syllables. Try to find familiar words among them. Sound each

syllable. What is the word?" He was given opportunity to apply these suggestions to two or three words each day. He made noticeable progress in the independent recognition of words after he learned that there must be a vowel in each syllable.

When remedial instruction began, M. M. was a word-reader. This was due to the fact that he encountered too many difficulties in third-grade reading material. As a first step in the development of the habit of recognizing words in thought units very simple selections were chosen. These were studied and carefully discussed before they were read aloud. He was frequently asked to underline thought units while studying a selection. This device lead to a better grasp of the thought and to more effective oral reading.

His vocabulary was limited at the beginning of the training period to words ordinarily found in first readers. A standard second reader was chosen as a guide in building up his vocabulary. It was hoped that the entire book could be reviewed in a term. Hence, it was divided into twelve divisions for weekly assignments. The work for each week was prepared at home. He made a list of all words which he did not know. These were printed on cards and made into a book. He reviewed the words in the book each day. As soon as he had learned to pronounce a word without error, it was removed from the book. These cards were kept on file and used in reviews from time to time. It is hoped that the same method can be applied to another standard second reader, thus insuring a relatively broad second-grade vocabulary.

A. L.: A FOURTH-GRADE GIRL WHO WAS WEAK IN ALL PHASES OF READING,  
BUT WHO ENCOUNTERED THE MOST SERIOUS DIFFICULTY  
IN INTERPRETATION

When A. L. was examined, it was found that she was retarded in all phases of reading and that she encountered serious difficulty in interpreting what she read. As a result, she was failing in all content subjects which required independent study. Her case is not unlike that of thousands of boys and girls who are promoted to the fourth grade before they have formed the fundamental habits and associations on which fluent, intelligent reading depend. Before such pupils are able to make satisfactory progress, they need help of a type which is not ordinarily provided in group instruction. The secret of success in teaching such pupils is the organization of exercises that emphasize those phases of reading in which the most serious difficulties are encountered. The following report describes some of the methods which were used by Miss Laura Keplinger, Fulton School, in the case of A. L.

Each lesson which was given during the training period included three distinct features: (a) phonetics and word recognition, (b) oral reading for quality and content, and (c) silent reading for content.

The remedial period included thirty minutes of work each day. The first few minutes of each period were used for drill exercises in phonetics and word analysis. The remainder of the period was devoted to oral and silent reading for content. Throughout the entire training period, A. L. spent much time in supplementary outside reading.

At the beginning of the training period, use was made of a chart of phonograms. A list of words was written on the board each day which contained the phonograms that had been studied. This gave her practice in recognizing words that contained familiar elements. Flash-card exercises, based on words that caused difficulty during the reading period, were conducted each day. Drill upon words was discontinued as soon as they were mastered.

*Thirty Fables Retold* were used in improving the quality of her oral reading. These stories are short, simple, and very interesting. They are printed on separate cards with a picture at the beginning of each story and with factual and thought-provoking questions at the end. When use was made of these stories, the pictures were discussed first to arouse interest. The stories were then read orally and the answers to the questions discussed. A record was kept of the errors which she made during a reading lesson. These and other words containing the same phonetic elements were drilled upon for a few minutes each day.

In order to stimulate thoughtful silent reading for content, supplementary reading exercises were assigned each day. On the following day, she was asked to reproduce what she had read or to answer questions based on the content. It was found that at home A. L. had no books suited to her limited reading vocabulary. She was, therefore, furnished with a list of simple, interesting stories and was encouraged to take home library books to read. This plan did a great deal toward establishing thoughtful reading habits.

Paragraphs were cut from second- and third-grade readers. These were read silently for the purpose of securing a clear grasp of their meaning. After a paragraph had been read, a reproduction was required and several questions similar to the following were asked: "What kind of morning was it? How did the birds show their joy?"

Simple directions were printed on cards as an additional means of training her to grasp the content. The following examples are typical of many others which were used: "Get a piece of chalk and put it on my desk." "Take hold of your left elbow with your right hand."

N. W.: A FIFTH-GRADE BOY WHO HAD SERIOUS DIFFICULTY IN RECOGNITION WHICH RESULTED IN INACCURATE ORAL READING  
AND INADEQUATE INTERPRETATION

Pupils are frequently discovered who are weak in most phases of reading because of unusual difficulties of a specific type. In the case of N. W. there was evidence that he had trouble with his eyes which

resulted in inaccuracies in recognition. It was very difficult to persuade his parents to have his eyes examined, and consequently the training period was at an end before a thorough examination was made. In providing remedial instruction, Miss Harriet L. Hinman, Cherry School, faced two very important problems, namely, to train him to recognize the details of a printed line more accurately and to interpret the content more intelligently. The results were not entirely satisfactory. It should be remembered, however, that N. W. had complained of eye trouble for three years. His case emphasizes the fact that school officers should provide means of determining physical or organic defects which handicap progress and should be authorized to take the necessary corrective steps.

Remedial instruction was organized along the following lines: (a) flash-card exercises to develop speed and accuracy in recognition; (b) systematic training in phonetics and word analysis; (c) sight oral reading to develop fluency in reading; and (d) silent-reading exercises to develop ability to interpret the content of passages accurately.

Before beginning remedial work, the conclusions reached in the diagnosis were discussed with N. W. in order that he might understand what his difficulties were. This proved to be a very effective step, inasmuch as it enabled him to co-operate intelligently in securing improvement. During the first four weeks, from fifteen to twenty minutes a day were used for sight oral reading of second-grade selections. The remainder of the half-hour each day was devoted to flash-card exercises and phonetic drills. After four weeks of remedial instruction, silent reading of simple selections was introduced and systematic study of prefixes, suffixes, and polysyllabic words was begun.

The words which caused difficulty in oral reading were printed on flash cards. His habit of spelling each word which was not recognized instantly was discussed with him. As soon as he became conscious of this habit, he endeavored to overcome it with the result that there was a noticeable increase in his rate of reading. As an additional help in overcoming difficulties in recognition, he was given frequent exercises in the analysis of both short and long words.

Selections from a second reader were used for several weeks in oral-reading exercises. As he read each paragraph, his errors were recorded. He became interested in trying to reduce the number of errors which he made. Inasmuch as he corrected himself frequently while reading, his rate was very slow. In order to secure more fluent reading, he read a paragraph each day while a record was made of the time required, and the number of errors. He was interested in improving his record from day to day and consequently gave undivided attention to his reading with the result that many of his inaccuracies were eliminated.

Special exercises were prepared to stimulate intelligent silent reading. When he failed to interpret the content accurately, he was asked to read the passages orally. The cause of failure could usually be attributed to the non-recognition of important words. Paragraphs cut from geographies, magazines, and readers were mounted on cards. Questions or directions such as the following were written on the backs of the cards or below the paragraphs: (a) information questions that could be answered in the words of the paragraph; (b) thought-provoking questions that could not be answered in the words of the paragraph; (c) requests to reproduce passages verbally or to write on the blackboard.

T. C.: A SIXTH-GRADE BOY WHO WAS WEAK IN ORAL READING, RATE OF SILENT READING, AND INTERPERTATION

In contrast with the case of N. W., pupils are frequently found in the fifth and sixth grades who experience fundamental difficulties in several phases of reading. This was true in the case of T. C. As a result, a comprehensive program of remedial instruction was necessary in order to enable him to overcome his most important weakness. The devices which are suggested by Miss June Mapes, Auburndale School, are very suggestive.

Remedial work was organized to accomplish the following purposes: (a) to develop independence in the recognition of words, (b) to increase his span of recognition, (c) to increase fluency and more effective grouping in oral reading, and (d) to increase his ability to interpret what he read.

Library books were provided as a means of arousing interest in reading. Inasmuch as T. C. had no preferences, Boy Scout stories were tried. He liked them so much that he went to the library for others. The *American Boy*, the *Youth's Companion*, and Western stories proved to be most interesting. He read each evening at home, frequently to his mother. The reading experience which he secured in this way stimulated a keen interest in reading and he soon talked quite freely about the stories which he read.

Remedial work was first attempted by using simple stories of second-grade difficulty. Flash-card exercises based on the words which caused difficulty were used for five or six minutes each day during the first four weeks. Beginning with the fifth week, five minutes each day were devoted to systematic work in word analysis. Phrase drills were given three or four minutes a day during the entire training period. During the last two weeks, timed silent-reading exercises were assigned. Approximately twenty minutes each day were spent in oral or silent reading. In these exercises, attention was directed primarily to the content.

After phonetics had been systematically reviewed, word analysis and word building were stressed. Words of two or more syllables which caused difficulty

were written on the blackboard. Their prefixes, stems, and suffixes were studied carefully.

In order to increase the span of recognition, lists of words, phrases, and short sentences were typewritten and presented in short-exposure exercises. The words were triple spaced and arranged in columns of fifteen. A piece of cardboard was used in exposing the words in which an opening, four inches long and three-fourths of an inch wide, had been cut. This made it possible to see only one word or phrase at a time as the opening moved from the top to the bottom of the paper. This was found to be a very successful device.

In order to improve his interpretation of what he read, the following devices were used: (1) He was asked questions about incidents in the story which related to some of his experiences. (2) Questions were written on the blackboard to guide him in the preparation of a lesson. (3) Informational paragraphs were cut from geographies and histories. These paragraphs were read silently in order to find the main idea or the topic sentence. (4) Stories were cut into paragraphs. He was then asked to read the paragraphs and to arrange them in proper sequence. This required a careful, deliberate study of the various paragraphs. (5) Lessons in "quick understanding" taken from the *Lewis and Roland Silent Readers* were used frequently. An example follows:

"The river in front of my house is flowing with ice in winter, but in the summer it flows freely by. As I look out of my window, I see the boys walking on the river.

"If it is summer, draw a tree on the first line. If it is winter, write the word ice there."

A. F.: A SIXTH-GRADE BOY WHO WAS WEAK IN ALL PHASES OF READING AND, CONSEQUENTLY, WAS UNABLE TO PREPARE ASSIGNMENTS IN CONTENT SUBJECTS

The case of A. F. is similar to that of T. C. A description of his case has been included because it emphasizes two very important points concerning remedial instruction for pupils who are retarded in all phases of reading: (a) the exercises which are used must be planned to meet the specific needs of pupils and (b) somewhat different exercises may be used by teachers in securing similar results. The report which follows describes the methods which were used by Miss Irene O'Brien, Gunckel School, in teaching A. F.

Remedial work was organized along the following lines: (a) careful inspection of words, (b) training in word recognition, (c) training in phrase recognition, and (d) exercises to promote habits of fluent, intelligent silent reading.

The first step was to arouse an interest in reading. Thirty minutes were spent each day for two weeks in reading simple interesting stories. Spirited discussions accompanied and followed the reading of each story. As soon as



interest had been aroused in a story, it was suggested that he take the story home and finish it. The next day, questions were asked concerning the content of the story or he was asked to reproduce what he had read. These methods insured a large amount of reading, with attention directed to the content.

In order to insure a careful inspection of words, a list of errors was made as he read. He was then informed concerning the number and kinds of errors which he made. Frequently a paragraph was read to him aloud as he had read it silently. He was asked to note the errors and to make corrections. He then re-read the paragraph himself, usually with no errors. This device led him to realize how many errors he made. Within a very short time he was making a conscious effort to avoid errors and to correct those which he made.

In order to develop independence in word recognition, considerable training in phonetics and word analysis was given. After the more important phonetic elements had been studied, ten phonetic rules were given to him on as many sheets of paper and he was asked to classify the words which caused him difficulty. Words similar in form, which he frequently mispronounced, were used in flash-card exercises. He frequently confused the tenses of verbs. Drill exercises including sentences similar to the following were prepared:

Today he says.	Yesterday he said.
Today he asks.	Yesterday he asked.

Flash-card exercises based on phrases and short sentences which did not cause difficulty were planned to increase his span of recognition. These phrases were organized into ten books, each book containing phrases of a similar type. As the phrases of a book were flashed, a record was kept of the number of errors. Drill was continued until all the phrases of a book were recognized twice on the same day. Another book was then begun. The books which had been completed were reviewed frequently.

In order to increase his rate of reading, he was given frequent timed reading exercises based on simple selections. At times he was required to reproduce what he had read. At other times, he answered questions concerning the content of selections. Occasionally he wrote the answers to a series of questions. He frequently read paragraphs in his geography in order to determine answers to specific questions.

C. W.: A SEVENTH-GRADE BOY OF FOREIGN PARENTS WHO WAS SERIOUSLY RETARDED IN READING

Many pupils fail in reading because they are not sufficiently familiar with the vocabularies in readers, because they have not learned to speak English sentences fluently, or because the experiences described in readers are new and unfamiliar to them. By the time such pupils reach the seventh grade, they are so seriously retarded that they become

discouraged and frequently discontinue school work altogether. Practically the only method of handling such cases is to give them a new start in reading through individual instruction. In the report which follows, Miss Dorothea Klag, Indiana School, describes the methods which she used in teaching C. W. Her discussion of the case is valuable because it reveals several types of problems which a remedial teacher encounters in the case of pupils retarded in reading because of language handicaps.

Remedial instruction was organized to accomplish the following purposes: (a) to overcome foreign accent in words containing *th* which he pronounced as *d*, (b) to develop independence in the recognition of unfamiliar words rather than to make an inarticulate attempt at their pronunciation, (c) to reduce his rate of oral reading, (d) to increase his rate of silent reading, and (e) to develop power of interpretation.

When remedial instruction began, he was stubborn, morose, indifferent, and stoical. The first problem, therefore, was to gain his confidence. He was invited to help prepare drill exercises by pasting words, phrases, sentences, paragraphs, and stories on cards. After several days had been spent in this way, he became more friendly, spoke more frequently, and began to participate in the training exercises more satisfactorily.

The instruction which he received was given in three ten-minute periods each day. The first was used for phonetic analysis and word building. The second was for practice in oral reading with attention directed to the content. The third was for silent reading and the thoughtful interpretation of what he read.

The first drill exercises were organized to secure the rapid recognition of words. In this connection, "books" of familiar words were made. These books consisted of cards which were two inches wide and six inches long. Each card had one word printed on it and all the words of a given family formed a book. For example, the following words were in one book: *trail*, *fail*, *nail*, *pail*, *mail*, and *tail*. The words were presented by exposing them rapidly. Those which were correctly pronounced were removed from the book; those which were mispronounced were used in additional drill exercises.

Words containing *th* and those which were pronounced with a foreign accent were printed on cards. These words were pronounced for him and then he repeated them frequently until he was able to pronounce them correctly.

Various methods were used for directing his attention to the content of passages. (1) A reproduction of the content was required. (2) Questions were written on the blackboard or on sheets of paper. These questions were studied before a selection was read. (3) Questions were written at the end of paragraphs which had been pasted on cards. (4) Questions were asked

rapidly by the teacher concerning the content of what had been read. (5) A key word was selected. He was asked to reproduce the statements made in the selection relating to the idea or thing represented by the key word. If he failed to give a satisfactory report, the passages were re-read.

**P. M.: A SEVENTH-GRADE BOY WHO WAS SOMEWHAT RETARDED IN MOST PHASES OF READING, BUT NOT SERIOUSLY RETARDED IN ANY ONE PHASE**

Many pupils reach the seventh grade who are somewhat retarded in most phases of reading and are consequently at a disadvantage in all subjects which require either oral or silent reading. A significant problem which confronts a remedial teacher in such cases is the selection of a limited number of problems for emphasis. This can be done only after a very careful study has been made of the characteristic errors and difficulties encountered by a pupil. In the report which follows, Miss Hattie Marker, Stickney School, points out the specific purposes of remedial instruction in the case of P. M. As far as space permits descriptions of the methods which she used are also included.

Remedial instruction was organized to accomplish the following purposes: (a) to correct minor errors, such as omissions, substitutions, and careless mistakes; (b) to secure effective grouping of words in oral reading; (c) to develop power in analyzing polysyllabic words for their meaning and pronunciation; and (d) to increase rate and comprehension in silent reading.

The first problem was to gain the pupil's confidence and to stimulate a desire to read well. This was done through reading simple, interesting selections either orally or silently and through discussing their content. Phonetics and diacritical marks were reviewed in order to facilitate the use of the dictionary. About five minutes a day for two weeks were used for this purpose. The analysis of polysyllabic words was next introduced. The words which caused difficulty were used in flash-card exercises. The remainder of the thirty minutes was used for oral and silent reading with emphasis primarily on the content.

To secure better grouping of words and the elimination of minor errors, third-grade selections were read for two weeks in three different ways: (a) the teacher read to the pupil to give him good models of expression; (b) the teacher and the pupil read in turn; and (c) the pupil read to the teacher or to a group.

During the third week, special attention was given to the elimination of such errors as omissions of endings and small words, substitutions, and insertions.

When fourth-grade selections were introduced, a study of polysyllabic words was begun. Stems, prefixes, and suffixes were emphasized and their meanings were carefully studied.

Short-exposure exercises which included words, phrases, clauses, and short sentences were given to increase his span of recognition. These were cut from readers which were not in use and were pasted on cards.

The selections which were used in the reading exercises were chosen from textbooks, supplementary readers, newspapers, magazines, and the *Lewis and Rowland Silent Readers*. The aim in selecting material was to secure relatively simple and very interesting selections. P. M. enjoyed many things better than reading outside of school hours, but would read mystery stories. He was encouraged to read stories selected from a list which was supplied to him. While reading this type of material he learned the value of a newspaper as a source of interesting information. He soon began to contribute information which he secured from newspapers.

In order to give training in accurate interpretation, paragraphs not exceeding fifty words in length were pasted on cards. He was asked to reproduce them or to answer questions about their content. Very simple passages were used at first to develop confidence. Later more difficult paragraphs were assigned. He was informed concerning his progress and he became interested in competing with his own record.

#### CONCLUSIONS

The reports which have been included in this chapter represent only a limited number of types of remedial cases. Furthermore, only a relatively small number of methods used by the Toledo teachers have been described. Nevertheless, it is apparent that these teachers have accumulated a great deal of valuable information concerning the characteristics of poor readers and appropriate kinds of remedial instruction. In diagnostic and remedial work which may be undertaken in Toledo in the future, the studies reported will serve three important purposes: (a) they will suggest methods of determining the difficulties which pupils encounter; (b) they will aid teachers in recognizing and classifying pupils who encounter serious difficulties; and (c) they will suggest numerous methods of teaching which can be used to advantage in securing improvement. A clear understanding of any type of instruction comes through careful studies of the problems which are involved. It is believed that Toledo teachers have taken a most significant step by their successful participation in these diagnostic and remedial studies.

The value of the Toledo experiment has been expressed pointedly by one of the supervisory officers in the following terms: (1) There is not only increased interest in the study of remedial cases in reading, but, in addition, teachers are suggesting that similar types of work be undertaken in spelling and arithmetic. (2) The special teachers have learned a method of studying individual cases. They are now eager

to begin new cases in order to make immediate use of the experience and information which they have acquired. (3) The attention of the regular classroom teachers has been called to the need and possibilities of individual work. They are urging the special teachers to give remedial instruction to other pupils who need help. As soon as teachers have concrete evidence of the value of a special type of work, they usually give their whole-hearted support to it. For this reason it is recommended that diagnostic and remedial work be started at first in a few centers in a school system. As the value of this work becomes apparent and as experience accumulates, similar studies can be started in other schools.

A third value of diagnostic and remedial work is that it calls to the attention of classroom teachers significant phases of reading which are frequently given little attention in group instruction, such as the span of recognition and the eye-voice span. Furthermore, many of the methods which are organized by special teachers can be used by classroom teachers in eliminating poor habits which have been acquired by an entire class or by certain pupils. .

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